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A CONSOLIDATED BIBLIOGRAPHY ON LAND-RELATED INFORMATION SYSTEMS

LAND-RELATED INFORMATION SERVICES GROUP

Alberta
ENERGY AND
NATURAL RESOURCES

A CONSOLIDATED BIBLIOGRAPHY ON LAND-RELATED INFORMATION SYSTEMS

LAND-RELATED INFORMATION SERVICES GROUP

SECOND EDITION

MARCH 1984
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Alberta
ENERGY AND
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PREFACE

In 1979, an agency was created to address the issue of coordination of land-related information systems in the province of Alberta. Designated the Land-Related Information Systems (LRIS) Coordination Project, this agency was given a two-fold task:

- to maximize accessibility, utility and cost-effectiveness of land-related information through the development of a provincial network of land-related information systems; and
- to develop a clearinghouse service which would assist in maintaining a state-of-the-art awareness of, and foster communication in, developments in the field of land-related information systems.

In 1981 the Coordination Project published the Consolidated Bibliography on Land-Related Information Systems. This volume is the second edition, produced under the auspices of the newly formed LRIS Group of the Alberta Bureau of Surveying and Mapping Division, which was transferred from the Alberta Bureau of Statistics in September 1982. This updated bibliography includes all the original material plus available relevant material published from March 1981 to March 1984.

The LRIS data base consists of full descriptions of individual bibliographic items often supplemented by an abstract and an indication of where it may be found locally. It is maintained in computerized form and is searchable on the basis of a number of parameters.

This publication contains bibliographic references extracted from the descriptions contained in the data base. The purpose of this published bibliography is to register the literature which the project has identified to-date as relevant to LRIS interests and concerns. The contents of the publication will be adequate to perform basic searches by author, title, subject or system name, and to uniquely identify the materials cited for the purpose of obtaining them.

ACKNOWLEDGEMENTS

The secondary sources for information in this bibliography include references from the following bibliographic data bases available through the Dialog (Lockheed Corp.) computerized information search services:

Compendex
Inspec
Ntis
Enviroline
Energyline
Social sciences citation index

Six Canadian data bases, accessible through the Alberta Research Council, were also searched. These are as follows:

Ontario Transport
Elias
Boreal Collection
Cansis
Geodial
Canplains

Development of the LRIS data base and publication concepts, and overall direction of the original project was the responsibility of Elaine L. Kozak of the LRIS Co-ordination Project. The second edition (1984) of the bibliography was produced by Nichols Applied Management.

TABLE OF CONTENTS

Introduction 1

Library Location Codes 7

Citations

1970 13

1971 25

1972 39

1973 61

1974 89

1975 115

1976 169

1977 203

1978 255

1979 299

1980 351

1981 379

1982 423

1983 497

1984 565

Indexes

Author 569

Title 657

Subject 747

Systems/Software 759

INTRODUCTION

1. Scope and Coverage

Land-related information systems (LRIS) are collections of information which are gathered, stored, retrieved, analysed, and disseminated on the basis of spatial (i.e., geographic) criteria, and the systems (manual or computerized) which support them. Land-related information ranges from geodetic survey points, through administrative information pertaining to ownership, occupancy and value of land, to attribute information describing the land or activities and structures on it. The systems developed to support land-related information include basic record systems, automated mapping systems and geographic information processing systems with the capability of performing complex data handling and analysis operations.

The literature cited in this consolidated bibliography concerns the development and use of LRIS. All phases in the development of a system are covered, from planning, through design, data collection, coding, storage and manipulation to analysis and display. Literature on theoretical foundations, development principles and guidelines, and aspects of LRIS development (e.g., economic or legal) also has been referenced, along with that containing descriptions of a variety of geographic-based information systems in many disciplines. In addition, the various areas of application of land-related information, particular needs and use are covered.

The areas of surveying, mapping and remote sensing are disciplines in their own right, but have considerable bearing on the field of land-related information. These areas are covered in the bibliography only in the context of their application to land-related information systems.

This second edition represents an ongoing attempt to provide more comprehensive coverage and to maintain currency of the bibliography. References cited are primarily from the North American market with minor influence from foreign sources, particularly European and Australian.

2. Organization of the Publication

The bibliography contains citations supplemented by four indices: author, title, subject and system/software.

Citations are organized by their year of publication, with each citation assigned a sequential number in that year (e.g., 81-014). This facilitates easy and rapid access to any citation, once its number is known, and provides the link between citations and the four indices.

Each citation provides the basic information necessary to uniquely identify a particular document, with abstracts of the items provided wherever these are available. Four main document sources include: journal articles, conference papers, published books or conference proceedings and reports. The information provided by the citations for each includes the following elements:

a. Journal articles
   . author(s)
   . article title
   . journal name
   . volume and issue number
   . date published
   . pages covered by article.

b. Conference papers
   . author(s)
   . paper title
   . conference
   . editor(s) of published proceedings (if appropriate)
   . publisher of proceedings (if appropriate)
   . date
   . pages covered by paper.

c. Published book, or conference proceedings
   . author(s) or editor(s)
   . title

. publisher
. date published.

d. Reports
. author(s) or editor(s)
. title
. publisher (if appropriate)
. date issued or published
. report number (if appropriate)
. NTIS number—unique numbers identifying reports which are part of the collection of the U.S. National Technical Information Service, and which may be used to order the report (if appropriate).

Access to the citations is provided by the following indices:

The **author index** provides an alphabetical listing of all the persons or corporations which are associated with the documents referenced either as authors or editors, along with the numbers of the citations which describe the works ascribed to each.

e.g., Alexander, Robert H.
76.008 76.007 76.006 76.005.

The **title index** contains titles of journal articles, conference papers, reports, books and conference proceedings are listed in alphabetical order, along with a citation number for each title.

e.g., Land resource information: policy and technical issues
76.063

The **subject index** contains terms representing important themes or topics concerning land-related information systems such as:

. concepts, principles, guidelines underlying LRIS development
. processes involved in the creation and use of LRIS
. areas of application of the information
. considerations or concerns relating to LRIS development or use
. system descriptions
. data handling techniques
. devices and equipment
. key elements of LRIS

Within the subject index, documents are referenced only in relation to terms reflecting their main themes. That is, if the main theme of an article is development principles or guidelines for urban information systems, and data collection is covered only in a minor fashion, the article will be referenced only under the index terms "system development" and "urban information systems". If, however, an article is concerned primarily with different methods of data collection, or potential problems, it will be referenced under the index term "data collection".

The documents are also referenced at the level of specificity or detail of their subject matter. This means that if a paper concerns "geological information/systems" in general, it will be referenced under that term. Another paper which is about a specific type of geological information or system, such as "mineral information/systems" will be referenced under this more specific term, and not under the generic term.

The language used to discuss and describe LRIS contains many terms with overlapping or very similar meanings. For example, "land use information/systems" is closely related to "regional information/systems". Rather than introduce a stringent control of the use of specialized or technical terms with similar meanings, the approach used in developing the subject index was to respect the author's choice of expression. Where possible, however, more general terms with similar meanings (e.g., cartography and mapping) were "controlled", that is, one was chosen for use over the other.

To facilitate the use of the subject index given these different conventions, extensive cross-references between subject terms are provided. These cross-references refer the user to preferred index terms for particular topics as well as suggest index terms concerning other topics of potential interest.

Finally, the use of the terms "information" and "data" in the subject index will be clarified. "Data" is used to refer to the collection of measurements, observations, values, etc., up to the point that it undergoes analysis, interpretation, or manipulation to produce a meaningful and useable statement or product. At this point, it is considered to become "information", and is referred to as such. Thus, there are terms such as "data collection", "data handling", "data handling needs", "data storage", etc. but "information needs", "information dissemination", "information interchange", etc.

An example of an entry in the subject index is given below.

e.g., Route selection
78.009 76.158 75.259 73.101

The **system/software** index has been included to provide access to the literature cited in the bibliography by another key parameter—the name of the particular land-related information system, or the software package being discussed. The systems and software included in this index are arranged alphabetically by their acronyms, as the majority are commonly known by these rather than their full name. The full name is also provided with the acronym if it is known, along with the name of the organization responsible for creating the system or software, where this information was available. Entries are referenced to citations by the citation's number.

e.g., DLMS (Digital Landmas System) U.S. Defense Mapping Agency
77.226

3. How to Use the Bibliography

Access by specific author, title, subject or system/software name is provided through the four previously described indices. The key element linking index entries to citations is the unique identifying number assigned to each citation. This permits location of citations by identifying pertinent citation numbers, and then referring to relevant citation sections.

The organization of the citation section by year permits users to obtain a state-of-the-art perspective for a time period by reviewing the collective works for the year or years of interest. In addition, the recent literature in the field is grouped together to facilitate a "current awareness" type of search.

Materials by a particular author or on a particular subject published during a given year may also be located by searching the appropriate index for only those citations which have numbers beginning with the relevant year.

Users of the bibliography are encouraged to address any requests for further information to the LRIS Group's office at the following address:

Alberta Energy & Natural Resources
Alberta Bureau of Surveying & Mapping
Land Related Information Services Group
3rd floor, 50th St. Atria
4949 - 94B Ave.
Edmonton, Alberta T6B 2T5
Tel: (403) 427-0454

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Calgary, Alberta
(237-3737)

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Calgary, Alberta
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Ralston, Alberta
TOJ 2N0

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National Research Council of Canada
Building M-55 Montreal Road
Ottawa, Ontario
K1A OS2

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T6G 2J8 (432-3776)

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Edmonton, Alberta
T5J 1G4 (423-5701)

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604 General Services Building
University of Alberta
Edmonton, Alberta (432-5198)

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Edmonton, Alberta
T6H 5T6 (422-1302)

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Department of Survey Engineering
(John D. McLaughlin)
P.O. Box 4400
Fredericton, New Brunswick
E3B 5A3

46 (NTIS) NATIONAL TECHNICAL INFORMATION SERVICES
U.S. Department of Commerce
5285 Port Royal Road
Springfield, BA 22161
(703-437-4650)

47 UNIVERSITY OF ALBERTA
Department of Geography
(Dr. J. C. Muller)
332 Tory Building
Edmonton, Alberta
T6G 2H4 (432-3573)

CITATIONS

1970
CITATIONS

CITATIONS

70.001

Alfredsson, Bjorn; Salomonsson, Owe; Selander, Krister; **Spatial information system, a pilot study - Introduction**, F.R.I.S. A:1, (Sweden. Central Board for Real Estate Data. Development Department) 1970, May.

Abstract: Concerns the role of the spatial data dimension in an integrated information system. Describes a pilot study in a region of Sweden for F.R.I.S..

Location: 07.

70.002

Barrett, Susan M.; **Methods and costs of geocoding 1971 census returns to a resolution of one metre: Report on the joint MHLG and OPCS feasibility study**, 32, (series: PS9 working roles), (Canada. Department of the Environment) 1970, July.

70.003

Batty, Michael; **Spatial theory and information systems**, W/P 3/0, (series: Working papers), (University of Reading. Urban Systems Research Unit) 1970, Mar..

70.004

Behrens, John O.; **Land registration in the United States**, (at: Economic Commission for Africa. Seminar on Education) (United Nations Economic and Social Council) 1970, Nov..

Abstract: Outlines the systems of land title recording and title registration currently used in the U.S., then sets out attributes that a unified land data system should include.

70.005

Bickmore, D.P.; **Recent advances in automatic cartography**, (at: Proceedings of the First Urban Data Management Symposium) (Planning and Transport Research and Computation Co. Ltd. London, England) 1970 pp.5-12.

70.006

Boyle, A. Raymond; **Automatic cartography: Description of C.H.S. system. Interim report**, (University of Saskatchewan) 1970, Jan..

70.007

Boyle, A. Raymond; **Automation in hydrographic charting**, (in: Canadian Surveyor, Vol.24, no.5) 1970, Dec. pp.519-537.

Location: 05.

70.008

Boyle, A. Raymond; Tomlinson, Roger F., ed.; University of Saskatchewan, Saskatoon. **Data input**, (at: Environment information systems. Proceedings of the UNESCO/I.G.U. First Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1970 pp.44-66.

Abstract: Discusses digitizing map data, man-machine interaction in data input and manipulation, and map data storage and retrieval.

Location: 07.

70.009

Brodheim, E.; Wang, C.; **Use of urban information system for computerized districting and mapping,** (at: (1969) URISA proceedings) (Urban and Regional Information Systems Association) 1970.

Abstract: Describes the use of an urban information system for performing computerized districting and mapping. This system can be used to investigate alternative means of forming school, election, and other such districts. For example, the system accepts such pertinent input data as the number of registered voters per address and combines this with a standard geographic information file to form a standardized input file to the districting or mapping being performed. For example, these may be the political boundaries within which election districts must be formed. The output would be contiguous and compact districts meeting the input specifications

70.010

Bucks County, PA. Planning Commission. **Design concepts for a planning commission information system,** (Planning Commission) 1970, July.

Abstract: Reviews existing information problems facing the county, concepts of an information system, application of an information system to address county's problems, cost of proposed system, and need for co-ordination of county agencies to increase information content and facilitate utilization of the proposed information system.

70.011

Burk, C.F., Jr.; **Development of automated geologically-based inventories of mineral and fuel resources in Canada,** (in: Geoscience documentation, Vol.2, no.6) 1970 pp.132-134.

Location: 23,25,27,20,28,38.

70.012

Cheng, K.; **Geocoding activities in the Ontario Statistical Centre,** (at: Seminar on Geocoding) (Ontario Statistical Centre) 1970 pp.68-75.

Location: 01.

70.013

Cheng, K.; **Seminar on geocoding,** (Ontario Statistical Centre) 1970.

Location: 01.

70.014

City of Edmonton. Planning Department. **Edmonton Planning Information System:EPIS, 8,** (series: City of Edmonton Planning Department. Research report), (City of Edmonton Planning Department) 1970, Dec..

Abstract: Considers the potential for a land use data information system for Edmonton to be used for planning applications. Discusses the proposed system in terms of data accuracy, updating and economics.

Location: 07.

70.015

City of Los Angeles. Community Analysis Bureau. **Requirements and constraints on the design of the urban information system,** (City of Los Angeles. Community Analysis Bureau) 1970.

Abstract: Identifies 60 Land Information Systems in operation in the city of Los Angeles

70.016

City of Reading, PA. USAC Project. **Development of an integrated municipal information system. Physical and Economic Development Subsystem. Geocoding techuology study**, PB-208 497, USAC-RPA-001, 5-7, (United States. Department of Housing and Urban Development) 1970, Sept..

Abstract: The report is from a USAC series produced by the City of Reading, covering activities from systems analysis through implementation and evaluation of urban information systems. It contains the status of geocoding/geoplanning in Reading, the definition of the Reading USAC geocoding system, a discussion on Census summary tape processing, and recommendations and conclusions. Also included is a glossary, a bibliography, the contents of 1970 Census summary tapes, a description of update procedures developed by SCRIS, and a discussion on the Commonwealth of Pennsylvania's summary tape services.

Location: 07.

70.017

Cole, E.J.; **Review of the New York State Land Use and Natural Resources Inventory**, (Cornell University. Center for Aerial Photographic Studies) 1970.

70.018

Colvocoresses, Alden P.; **National Reference System and its relationship to mapping**, (at: ASP/ACSM Conference 1970) (United States Geological Survey) 1970.

Abstract: Discusses universal transverse mercator (UTM) and proposes several reasons why it is superior to the state plane coordinate (SPC) for use as a national reference system for mapping.

70.019

Contra Costa County Planning Department. **Land use inventory design: Component 6-11A and 6-11B**, PB-198 475, (Contra Costa County Planning Department) 1970, Jan..

Abstract: The report is the first of two which comprises an existing land use survey. It covers the preparatory work of determining how the inventory activities are organized and conducted and how the data produced by the inventory are classified.

70.020

Crellin, Ronald E., Ed.; **Los Angeles County data files geocoding with ADMATCH and their applications**, (at: American Institute of Planning. Annual Conference).

70.021

Feriverda, Gerald J.; Wisconsin Bureau of State Planning. **Development of a planning information system for Wisconsin State Government**, PB-194 403, BSP-IS-70-10, (Wisconsin Bureau of State Planning) 1970, Oct..

Abstract: The paper describes the development sequence, the products and elements, and the related subsystems of the Wisconsin planning information system. The system described is being developed in a three-phase evolutionary process with the first phase concerned with an inventory and cataloguing of state planning data, the second phase concerned with the development and production of a series of information products, and the final phase concerned with the development and implementation of an integrated comprehensive network system.

70.022

Gould, P.; **Computers and spatial analysis: Extensions of geographic research,** (in: Geoforum, Vol.1.1,) 1970 pp.53-69.
Location: 27,28,36,20,34,38.

70.023

Horwood, E.M.; Barb, Charles E., Jr.; **Geocoding systems in the United States - 1970. General overview with references to Canadian experiences.,** (at: Seminar on Geocoding) (Ontario Statistical Centre) 1970 pp.49-57.
Location: 01.

70.024

Howe, Robert T.; **Coordinates versus confusion,** (in: Journal of the Surveying and Mapping Division, Vol.96,) 1970, Sept. pp.101-200.
Abstract: Proposes parcel description system based on state plane coordinate system and block and lot number suggests change from monument location controlling to a system where coordinates control, with monument being used only as evidence of approximate location.
Location: 20, 28, 36.

70.025

Howe, Robert T.; **Time to step toward a modern system of land parcel records,** (in: Surveying and mapping, Vol.30, no.1) 1970 pp.81-90.
Location: 27,28,20,38.

70.026

Hutt, R.B.; **Development and use of the Ontario Well Data System,** (in: Journal of Canadian petroleum technology, Vol.9, no.1) 1970, Jan.-Mar. pp.52-9.
Abstract: Describes the Ontario Well Data System which stores geological data, for use by independent operators and the government, and outputs the data in the form of maps.
Location: 02.

70.027

Ion, Robert J.; **Geographic basis, in geographically referenced data storage and retrieval system,** (at: Presented at the UNESCO/IGU First Symposium on Geographical Information Systems) (Canada. Statistics Canada) 1970.
Location: 01.

70.028

Johnson, R.D.; Ruff, Jacob F.; **Geoplans: A sub-system of the Kansas City Regional Information Systems (KCRIS),** (at: 1969 URISA proceedings) (Urban and Regional Information Systems Association) 1970 pp.136-160.
Abstract: Discusses a subsystem of KCRIS for data analysis, updating and data retrieval, based on data referencing by street addresses.

70.029

Kadanoff, Leo P.; Voss, Jerrold R.; Bouknight, Wendell J.; **Computer display and analysis of urban information through time and space,** (in: Technological forecasting and social change, no.2) pp.77-103.
Abstract: Describes a complex computer system for compilation of a wide variety of urban data for use of urban planners
Location: 38.

70.030

Kingston, Peter; Tomlinson, Roger F., ed.; IBM Canada Limited, Halifax, N.S.. **Data use and manipulation,** (at: Environment information systems. Proceedings of the UNESCO/I.G.U. First Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1970 pp.67-127.
Abstract: Discusses information storage, manipulation, system control facilities,

and information retrieval facilities.
Location: 07.

70.031
Langley, P.G.; Russell, Robert M.; Sharpnack, David A.; Van Rossel, J.; University of California. Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.. **Remote sensing applications in forestry - the development of an earth resources information system using aerial photographs and digital computers. Annual progress report**, N70-42044, NASA-CR-114121, (United States. Department of Agriculture).

70.032
McDaniel, R.; **Geocoding in research**, (at: Seminar on geocoding) (Ontario Statistical Centre) 1970 pp.27-36.
Location: 01.

70.033
McKay, M.C.; Daly, J.R.; Hadgson, J.A.; Peters, J.R.; **Feasibility study: Resource data systems**, 12, (series: Manitoba. Department of Mines and Natural Resources/Canada Land Inventory Project reports), .
Abstract: Presents the findings of a study carried out in Manitoba to identify resource data handling requirements for a typical provincial government.
Location: 07.

70.034
Metropolitan Washington Council of Governments, D.C.. **Metropolitan planning data from local governments: A demonstration of land use data compatibility**, PB-198 788,.
Abstract: The project reported on was pursued for the purpose of demonstrating that metropolitan planning program can be made available in compatible form from local government sources within a complex metropolitan area, and that an actual operating metropolitan data system based on local systems can be established.

70.035
Moyer, D. David, ed.; **Status and purpose of research on the economics of improved land data systems**, (United States. Department of Agriculture. Economic Research Service) 1970, Dec..
Abstract: Reviews research by economic research service in regard to improved land records system, conducted through 1970. The need for improved land data systems are also reviewed, along with plans for future research, particularly related to land title record systems

70.036
Ontario. Ministry of Revenue. **Geocoding programme of urban centres**, (Assessment Standard Branch) 1970, Dec..
Location: 01.

70.037
Pearl, Milton A.; Public land Law Review Commission, Washington, D.C.. **Inventory information on public lands, Volumes 1 and 2**, PB-194 197, PB-194 198, 1970, July.
Abstract: The statistical data on resources and uses which are available for section 10 lands are shown in Volume 1 of this study. Volume 2 examines agency objectives, standards and methods for the compilation of such data and summarizes staff findings of their adequacy for purposes of the Commission's studies.

70.038

Pennsylvania State Planning Board, Harrisburg, PA.. **Pennsylvania. Planning Region 2 geocoding report,** PB-194 746,.

Abstract: The objective of the geocoding project was to develop procedures and a basic format which would enable the counties of Berks, Lehigh and Northampton in the Commonwealth of Pennsylvania to obtain 1970 census information in a form useful for local planning purposes. Maps of the local areas were checked for accuracy in transcribing data onto geocoding worksheets. Address coding tapes were programmed for printout, compared with the maps, local optional field codes were developed, and this data was then added to the file. A flexible, computerized system permitting data retrieval to the block or block face level results. Problems are noted and recommendations for further effort are submitted.

70.039

Pierce, Albert I.; **Continuing phase urban data systems,** (at: 1969 URISA proceedings) (Urban and Regional Information Systems Association) 1970 pp.355-381.

Abstract: The view is expressed that effective information systems must be functional rather than departmental, regional rather than municipal and that development can only take place in a cooperative environment. The position is taken that agencies such as urban transportation planning can and should contribute to the development of functional information systems which can provide a continuous data base for planning that is an inexpensive by-product of a logical management process and ultimately replaces the traditional data bank.

70.040

Roberts, Willis F.; **Computer-based land titles system, Ontario Institute of Land Surveyors annual report,** 1970 pp.138-144.

Location: 01.

70.041

Roberts, Willis F.; **Maritime provinces mapping and land registration programme,** (in: Surveying and mapping, Vol.30, no.1) 1970, Mar. pp.77-80.

Abstract: Describes the four-phase programme designed to overhaul the mapping and land registration system in the provinces of New Brunswick, Nova Scotia, and Prince Edward Island. Includes discussion of surveying, mapping, land title, and data bank phases of program.

Location: 27,28,20,38.

70.042

Rotoff, Basil M.; University of Manitoba. Department of City Planning. **Planning a land use data bank: A pilot project,** (University of Manitoba. Department of City Planning) 1970, July.

Abstract: Describes a pilot study of a land use and planning data bank in a small Manitoba community and considers reasons for the lack of success of such data banks.

Location: 20.

70.043

Scoggins, Doris; **Polk County, N.C., slays paper Goliaths with microfilm Davids,** (in: American county, Vol.1970, June,) pp.34-35.

Abstract: Describes the microfilm land title document storage system used in Polk County, North Carolina. The 16mm system uses a recordak starfile RV-2 microfilmer. Indexed microfilm images can be rapidly retrieved, using a lodestar reader and reader printer.

70.044

Selander, Krister; **Registration and storing of coordinates**, FRIS C:1, (series: Spatial information system, a pilot study), (Sweden, Central Board for Real Estate Data. Development Department) 1970, Oct..

Abstract: Discusses techniques of data encoding and data storage of spatial data.

Location: 07.

70.045

Sprunt, B.F.; **Geographics: a computer's eye-view of terrain**, (in: Area, no.4) pp.54-59.

Location: 20,28.

70.046

Swann, D.H.; DuMontelle, P.B.; Mast, R.F.; Van Dyke, L.H.; **ILLIMAP - A computer-based mapping system for Illinois**, (series: Illinois State Geological Survey circular), (Illinois State Geological Survey) 1970.

Abstract: Describes an automated mapping programme for mapping at any scale with great accuracy. Discusses the geocoding system, and data referencing conversions for grid data, map, data accuracy and hardware requirements.

Location: 07.

70.047

Symons, D.C.; Canada. National Capital Commission. Computer Information System. **Parcel geocoding system for urban and rural information**, (National Capital Commission) 1970, Sept. 23.

Abstract: Describes geocoding system for polygonal data which has the capability to identify streets, intersections, land parcels, municipal services and public utilities. Discusses file structures and data retrieval capabilities.

Location: 07,01.

70.048

Symons, D.C.; **Rural and single property geocoding**, (at: Seminar on Geocoding) (Ontario Statistical Centre) 1970 pp.58.67.

Location: 01.

70.049

Taylor, D.R.F.; Douglas, David H.; **Computer atlas of Ottawa-Hull (with a bibliography of computer-mapping)**, (Carleton University, Department of Geography) 1970, Sept..

Abstract: Illustrates the potential of automated mapping with many examples of data display for the Ottawa region. Includes a bibliography on automated mapping

Location: 07.

70.050

Tobler, W.R.; Tomlinson, Roger F., ed.; University of Michigan. Department of Geography. Ann Arbor, MI.. **Data display and presentation**, (at: Environment Information Systems. Proceedings of the UNESCO/IGU First Symposium on Geographical Information systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1970 pp.128-145.

Abstract: Discusses types of automated mapping display equipment in terms of user needs, economics, product resolution and display presentation

Location: 07.

70.051

Tomlinson, Roger F., ed.; **Environment information systems. Proceedings of the UNESCO/IGU First Symposium on Geographical Information Systems. Ottawa, Ont. Sept. 28 - Oct. 2, 1970**, (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1970.

Abstract: Contains various papers which explore the scope for environmental data handling in digitized form and how it may be used to shorten for period between data collection and data utilization.

Location: 07.

70.052
Tomlinson, Roger F., ed.; **System review,** (at: Environment information systems. Proceedings of the Unesco/I.G.U. First Symposium on Geographical Information Systems) (International Geographical Union Commission on Geographical Data Sensing and Processing) 1970 pp.26-43.
Abstract: Reviews a number of geographic information systems and compares them on the basis of function, i.e. image systems, information retrieval systems and integrated systems. Systems reviewed include:MIADS/2, SYMAP, GEOMAP, AUTOMAP (C.I.A.), SNAPS, GIMMS, GSDSR, the NCC Information System, MAP/MODEL, the Canadian Hydrographic System, CGIS, SYMAP, GRID, SYMVU, CALFORM, OBLIX, and the Canadian Meteorological Service.
Location: 07.

70.053
United States. Bureau of the Census. **Data uses in urban planning,** 9, (series: Census use study), (United States. Department of Commerce) 1970, Feb..
Abstract: Presents results of research into techniques for use in urban information systems. Discusses data needs, DIME, ADMATCH, mapping software and automated mapping hardware.
Location: 07.

70.054
United States. Department of Commerce. Bureau of the Census. **DIME geocoding system,** HRP-0006997, 4, (series: Census use study), (Government Printing Office) 1970, July.
Abstract: Describes the development and use of DIME (Dual Independent Map Encoding)/GBF (Geographic Base Files). Also contains a technical description of the DIME system and a step by step outline for the development of a DIME files.
Location: 07.

70.055
Wallmer, H.; **New land bank in Sweden,** (at: Proceedings of the First Urban Data Management Symposium) (Planning and Transport Research and Computation Co. Ltd.) 1970 pp.81-90.

70.056
Weatherhead, E.; **Geo-coding - A technique in the development of information systems,** (in: Ontario economic review, Vol.8, no.5) 1970 pp.4-12.
Location: 01,18,19.

70.057
Weeks, D.C.; **Implementation of the DBS Geocoding System in Ontario,** (at: Seminar on Geocoding) (Ontario Statistical Centre) 1970 pp.37-43.
Location: 01.

70.058
Weldon, John I.; **Basis concept - Geocoding by DBS,** (Ontario Statistical Centre) 1970 pp.10-26.
Location: 01.

70.059
Williams, John L.; **System 360,000:Automated tax collection and assessment updating,** (at: 1970 URISA proceedings) (Urban and Regional Information Systems Association) 1971 pp.190-198.
Abstract: Automation of sizable property tax assessment and collection systems is best accomplished on a modular basis. Each module should be large enough to mark a real achievement, and result in an economic benefit and small enough to be understood (and hopefully appreciated) by the employees who depend

upon, and must operate the new systems. The tax billing system module already on the computer was the data base. Programmes and procedures to automate the assessment system are being written. Needs of a rudimentary land information system are being defined. It is unrealistic to expect a comprehensive land data bank to be implemented simultaneously with assessment automation. Priority must be given to successful conversion of assessment, collection, and tax distribution.

70.060

Chicago Title computer system aids accuracy, (in: Title news, Vol.1970, June,).

Abstract: Describes a computerized system used by Chicago Title and Trust Company to examine histories of the 1.3 million land parcels in Cook County, Illinois.

70.061

Federal agencies sponsor prototype information systems, (in: Urban information systems report, Vol.1, no.1) 1970, Sept. pp.7.

Abstract: Describes the general USAC information system approach and outlines the six USAC subsystem projects in Charlotte, North Carolina, Wichita Falls, Texas, Dayton, Ohio, Long Beach, California, Reading, Pennsylvania, St. Paul, Minnesota.

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71.001

Aangeenbrug, Robert T.; **Essay on the minimum requirements of a geographic information system**, (at: URISA Working Session on Geographic Base File Development) (Urban and Regional Information Systems Association) 1971 pp.67-71.

71.002

Amidon, E.L.; Aiken, G.S.; **Algorithmic selection of the best method for compressing map data strings.**, (in: Association for Computing Machinery. Communications of ACM, Vol.14, no.12) 1971 pp.769-774.

71.003

Amidon, E.L.; Sharpnack, David A.; Russell, Robert M.; pacific Southwest Forest and Range Experiment Station, Berkeley, CA.. **Development of an earth resources information system using aerial photographs and digital computers**, N72-28328, NSA-CR-127690, (United States. Department of Agriculture) 1971, Sept. 30.

Abstract: Analytical photogrammetry demonstrated that automatic three dimensional mapping of forest terrain as technically feasible. The examples were black and white photography at scales of 1:10,000 and 1:24,000. The major improvement in terrain modelling was the addition of the capability of joining small quadrangles together to form one large model about equal to the effective area of the pair of photographs. Improvements of somewhat lesser importance include: (1) the use of up to 16 grey levels, (2) the elimination of several coordinate transformations, and (3) the annotation of three-tone hysocline maps with elevations.

71.004

Amsterdam, Robert; **Application of New York City's Geographic Base File**, (at: 1971 URISA Workshop on Geographic Base File Developments) (Urban and Regional Information Systems Associations) 1971 pp.57.61.

71.005

Ayers, Eunice; **Recordkeeping in Forsyth County, N.C. - Past, present, future**, (in: American county, Vol.36, no.8) 1971, Dec. pp.7-9.

Abstract: Describes history of land title recording in North Carolina and recent changes made that reduce costs as well as providing improved service to both public and private users of Land Title Records.

71.006

Barb, Charles E., Jr.; **Rocky road to 1980: A scenario of the future of automated geocoding technology of 1980**, (at: 1971 URISA Workshop on Geographic Base File Developments) (Urban and Regional Information Systems Association) 1971 pp.33-42.

71.007

Barraclough, Robert E.; United States. President's Commission on Federal Statistics. **Geographic coding, Federal statistics: Report**, (U.S. Government Printing Office) 1971 pp.219-296.

71.008

Canada. Department of Public Works. **Examination of the need for, and alternatives to, standardization of land use classification and coding in Canada,** (Canada Department of Public Works) 1971.
Location: 01.

71.009

Canada. Statistics Canada. **CANSIM: Geocoding: Input-output tables. New developments at the Bureau,** (Canada. Statistics Canada) 1971, Jan..
Location: 01.

71.010

Carlin, Cyril B.; New Brunswick, Department of Natural Resources. Fredricton, N.B.. **Programme development for a computer-based land titles system,** (in: Canadian surveyor, Vol.25, no.2) 1971, June pp.188-190.

Abstract: Outlines programmes being developed for an automated land titles system in the Maritimes. Describes attribute coding, data file structures and file maintenance and updating.

Location: 01,05,09.

71.011

Carlin, Cyril B.; **Property identifiers for the Martime provinces,** (New Brunswick. Department of Natural Resources) 1971.
Location: 39.

71.012

Chatterton, William A.; Knitter, H. Robert; **Unified automated land title system for Wisconsin,** (in: Wisconsin bar bulletin, Vol.1971, Dec.,) pp.8-11, 14.

Abstract: Describes a grant proposal made to the state bar of Wisconsin to develop a unified land title system for Wisconsin. Outlines needs for such a system and describes what the characteristics of such a system would be.

71.013

Christensen, Robert E.; Washington University, Urban Data Center. **Update and maintenance of geographic base files including a man-machine graphic approach. Research report,** PB-202 730, UDC-NSF-71-3, UDC-RR-6, (Washington University. Urban Data Center) 1971, August 15.

Abstract: The report examines the update and maintenance of machine readable geographic base files. It provides not only a general discussion of changes that affect an urban area base file and the methodology for identifying these changes, but also a discussion of the incorporation of these changes into a geographic base file. The report further references the design, capabilities, and limitations of a man-machine graphic updating system developed at the Urban Data Center for GEOBASYS, the Seattle-King County (Washington) Area Geocoding Utility.

71.014

City of Reading, PA. USAC Project. **Integrated Municipal Information System. Physical and Economic Development Subsystem. Systems analysis. Volume 1: summary of systems analysis. Completion report on Task 1,** PB-208-500-1, USAC-RPAO-004, ITI-Volume 1, (City of Reading, PA.) 1971, Sept..

Abstract: The report is from a USAC series produced by the City of Reading, Covering activities from systems analysis through implementation and evaluation of urban information systems. It contains a summary of the systems analysis activity. The section headings include: The Reading Environment, Summary of Findings and Conclusions. Summary of Systems Analysis Methodology, Summary of Property Registration Area, Summary of Private Property Permits Area, Summary of Utility Services Area, Summary of Transportation Operations and Public Works Area, Summary of Urban Renewal Implementations, and Summary of Comprehensive Planning. The Reading systems analysis pertains specifically to the physical and economic development environment.

71.015
City of Reading, PA. USAC Project. **Integrated Municipal Information System. Physical and Economic Development Subsystem. Systems analysis. Volume 3: Systems analysis of operational areas. Completion report on Task 1,** PB-208 500-3, USAC-RPAO-006, ITI-Volume 3, (City of Reading, P.A.) 1971, Sept..

Abstract: The report is from a USAC series produced by the City of Reading, covering activities from systems analysis through implementation and evaluation of urban information systems. The operational areas discussed in the report are part of the physical and economic development system in Reading. These areas include property registration, property permits, utility services, transportation, public works, and urban renewal. Overall findings and conclusions are discussed.

71.016
City of St. Paul, MN. USAC Project. University of Minnesota. **Integrated Municipal Information System. Human Resources Development Subsystem. Analysis of Geocoding. Volume 4.,** PB-208.755-4, USAC-SPMO-004, ST0009-4, (series: Phase 10 systems analysis task completion report), (City of St. Paul, MN.) 1971, Mar..

Abstract: The report is from a USAC series produced by the City of St. Paul, covering activities from systems analysis through implementation and evaluation of urban information systems. It describes geocoding methods and geographic data existent in the relevant agencies in the St. Paul urban area. It also describes the needs of the agencies for geographic data and their current and potential usage of this data. The report contains a proposal for a geocoding standard and describes a conceptualized geocoding system for the input, processing and retrieval of geographic data.

Location: 07.

71.017
Clayton, K.; **Geographical reference systems,** (in: Geographical journal, Vol.137,) 1971 pp.1-13.

Location: 20.

71.018
Cobourn, Lee A.; Fochi, William L.; Utility Data Corporation, Houston, TX.. **California digital mapping program,** (at: ASP-ACSM Fall Convention, Technical papers) (American Congress on Surveying and Mapping) 1971 pp.393-406.

Abstract: Description of mapping project covering approximately 50,000 square miles in the State of California. High altitude aerial photography was used to locate the positions of apparent corners in the civil survey. These results were used in conjunction with data from the Bureau of Land Management to perform a reconstruction of the civil survey by computer techniques.

71.019
Connelly, D.S.; **Experiment in contour map smoothing on the E.C.U. Automated Contouring Systems,** (in: Cartographic journal, Vol.8,) 1971 pp.59-66.

Location: 20,28,36.

71.020
Cooke, Donald F.; Urban Data Processing Incorporated, Cambridge, MA.. **Geocoding and geographic base files: The first four generations,** (at: American Institute of Planners "Confer-in West".).

Abstract: Provides a framework for describing the brief history of gbf's and geocoding. Defines four "generations" of geographic base files. The generations are defined solely chronologically. The order of generations doesn't imply technological advancement in all cases, and some techniques were developed in ignorance of previous work (DIME vs. SACS, for example). The generations and their approximate dates are: 1961-1964 The first major geocoding systems:

AULT and SACC 1966-1969 The first nationwide system: Address Coding Guides (ACG) 1967-1971 The second nationwide system: DIME 1968-? Future systems: parcel files.
Location: 07.

71.021
Cooke, Donald F.; Urban Data Processing Incorporated, Cambridge, Ma.. **GEOCODING-71'. Papers from the Working Session on Geographic Base File Developments. 9th Annual Conference of the Urban and Regional Information Systems Associations**, PB-211 743, UDP-72-1, (Urban Data Processing Incorporated) 1971, Sept..

Abstract: The proceedings includes an introduction to the objectives and activities of the URISA GBF SIG, a directory of the membership totalling about 500 professionals and 16 papers dealing with several aspects of the technology. Papers include 'Geographic Base Files: Status and Prospects', 'Theoretical Basis of Dual Independent Map Encoding, (DIME)', 'Rocky Road to 1980, A Scenario of the Future of Automated Geocoding Technology to 1980', 'The Development of a Geography Program Exchange'. 'An Essay on the Minimum Requirements of a Geographic Information System'. 'Geographic Base File Developments and the Geocoding Program of Statistics Canada'. 'DIME Concept Application in Europe: A German Experience', among others.

71.022
Cooke, L.J.; Giffen, N.B.; Verbisky, S.; **User-oriented summary and description of the data base, data processing system and computerized document retrieval system employed in regional land use studies**, (Department of Municipal Affairs. Provincial Planning Branch) 1971, May.
Location: 01.

71.023
Corbett, James P.; Farnsworth, George L.; **Theoretical basis of Dual Independent Map Encoding (DIME)**, (at: Urban and Regional Information Systems Association Working Session on Geographic Base File Developments) (Urban and Regional Information Systems Association) 1971 pp.22-31.

71.024
Dueker, Kenneth J.; Horton, Frank E.; **Information systems for the urban transportation planning process. Technical report**, (University of Iowa. Institute of Urban and Regional Research) 1971, June.

71.025
Ducker, Kenneth J.; Horton, Frank E.; **Urban change detection systems: Status and prospects**, (at: Proceedings of the Seventh International Symposium on Remote Sensing of Environment. Volume 2) 1971, May pp.1523-1536.

71.026
Unit, Royal College of Art. Experimental Cartography; **Automatic cartography and planning**, (Architectural Press) 1971.

71.027
Farnsworth, George L.; **Spatial analysis**, (at: 1970 URISA proceedings) (Urban and Regional Information Systems Association) 1971 pp.414-422.

Abstract: Describes the two most widely used computer mapping programmes, admatch & dime. Discusses different approaches in the use of these programmes to obtain the best results for spatial analysis. Also included a selected bibliography of districting algorithms that apply to problems of spatial analysis.

71.028

Ferguson, Helaman, R.P.; **Point-in polygon algorithms**, 7, (series: Urban Data Center research reports), (University of Washington) 1971.

71.029

Fisher, Kenneth Paul, Ed.; **Next step: Compatible identifiers**, (in: American county, Vol.36, no.8) 1971, Sept. pp.14,16.

Abstract: Discusses the need for a uniform land parcel identifier system in the U.S., outlines the proposed Clipp Conference to be held in Atlanta, and discusses the format that will be used to integrate the many disciplines in attendance in order to arrive at a workable solution to the land data indexing problem.

71.030

Flemming, Neil L.; Economic Improvement Corporation, Charlottetown, P.E.I.. **Prince Edward Island story**, (in: Canadian surveyor, Vol.25, no.2) 1971, June pp.179-180.

Abstract: Discusses the four phases of a survey, mapping, and land registration programme in P.E.I., including geocoding of land parcels and the establishment of a land data bank.

Location: 01,05,09.

71.031

Gardinier-Hill, Col. R.C.; **Digitising and editing techniques**, (at: International Cartographic Association Conference) 1971.

71.032

Gilman, C.R.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Photomechanical experiments in automated cartography**, (at: ASP-ACSM Fall Convention, Technical papers) (American Congress on Surveying and Mapping) 1971 pp.289-307.

Abstract: Describes a prototype revolving illuminator design form fabricated for experiments in line-weight manipulation. Sufficient exposures have been made with the device to indicate that positive control of line weight increases and decreases up to 0. 2 inch is attainable. The device has been used for photomechanical experiments in slope mapping, hill shading, generalization of map detail, and preparation of map copy for digitizing.

71.033

Gustafson, Robert H.; **Computers and statistics as an aid to appraising single-family residences, Application of econometric methods to the appraisal process**, (International Association of Assessing Officers) 1971 pp.39-74.

Abstract: A general summary of setting up a computer assisted appraisal system including the data collection, edit, analysis, cost analysis, and estimation of value through MRA, and cost. Gives a good overview of the entire process needed for a computer assisted appraisal system complete with forms.

71.034

Haack, Harvey; **Geocoding and CATS: A before and after review**, (at: 1970 URISA proceedings) (Urban and Regional Information Systems Association) 1971 pp.139-155.

Abstract: The original Chicago area transportation study (CATS) of 1955 was expanded in 1968 to include all eight counties of the Chicago-Northwestern standard consolidation area. This paper emphasizes the geocoding scheme developed at CATS, particularly the initial scheme of CATS and the revised scheme adopted for the expanded continuing study. Maps, illustrations, and examples allow easy interpretation of the geographic systems.

71.035

Hackman, Frank C.; Bigler, Craig; Weaver, Rodger; Utah University. Bureau of Economics and Business Research. Salt Lake City, UT.. **Implementation of composite computer mapping**, Com-73-10383,.

Abstract: Composite computer mapping (CCM) is the name assigned to a recently developed technique to enhance the quality of decision making in the administration of aid to economic development. Chapter 1 serves as an introduction to the project and presents the nature and intent of composite mapping. Chapter 2 organizes the mapped basic factors into four sections by type of factor mapped: transportation, land use and characteristics, population, and work force and employment. Chapter 3 consists of three major sections: application demonstrations of Opportune Location Maps (Oplocs) for manufacturing industries, illustrative applications in tourism and recreation and in mineral extraction project decision-areas, and Chapter 4 is the most demanding of the chapters. It takes the last five maps for presentation of research and mapping strategies for subsequent applications. The initial map production software used the Utah University UNIVAC 1108 but has been converted to the CDC 6400.

71.036

Hadfield, Colin D.; **Land registration and legal surveys: The basic problem**, (in: Surveying and mapping, Vol.31, no.1) 1971, Mar. pp.39-54.

Abstract: Describes land survey system in Ontario. Concludes that many poor quality surveys have been made even worse due to deed recording and title registration systems. Suggests five steps to correct problem

Location: 05.

71.037

Hamilton, Stephen S.; **Computerized systems in mass appraising**, (in: Assessors journal, Vol.1971, Jan.,) pp.61-80.

Abstract: A description of the system adopted in Lane Country, Oregon. Emphasis on land records, data processing and management on entire system. Details on value assessment modeling techniques are not included.

71.038

Hansen, Hans; Kevany, Michael J.; **DIME concept application in Europe: A German experience**, (at: URISA Working Session on Geographic Base File developments) (Urban and Regional Information Systems Association) 1971 pp.88-96.

71.039

Harris, L.J. Brig.; **Approach to automatic cartography for topographic mapping in Canada**, (series: Technical report series), (Canada. Department of Energy, Mines, and Resources. Surveys and Mapping Branch) 1971.

Abstract: Summarizes the approach, used by the Surveys and Mapping Branch, to the automated production of topographic maps. Describes and evaluates digitization, processing and data display techniques.

Location: 01.

71.040

Hsu, Mei-Ling; Porter, Philip W.; University of Minnesota. Department of Geography. **Computer mapping and geographic cartography**, (in: Annals, Association of American Geographers, Vol.61,) 1971 pp.796-799.

Abstract: Examines automated mapping and its effect on map design, using a computer-produced atlas of Kenya as a case study. Discusses the need for the cartographer to understand the basic algorithm and the assumptions of the mapping programmes.

Location: 01,07.

71.041

Ion, Robert J.; **Geographic Base File developments and the geocoding programme of Statistics Canada**, (at: Geocoding-71) (Urban and Regional Information Systems Association) 1971 pp.85-87.
Location: 01.

71.042

Ion, Robert J.; Canada. Dominion Bureau of Statistics, Census Division, Geography Section. **Grid co-ordinate systems and their use in urban information management. Seminar C**, (at: COMRIM '71. Proceedings of the First Annual Conference) (Committee on Municipal and Regional Information Management) 1971 pp.190-196.
Abstract: Reviews properties of co-ordinates and advantages resulting from their use in urban information systems. Discusses the use of geocoding by the Dominion Bureau of Statistics and considers how this geocoding system may be applied at the local level.
Location: 07,01.

71.043

Jones, R.L.; **Generalized digital contouring program**, NASA TN D-6022, (NASA Langley Research Center) 1971.

71.044

Kates, Peat, Marwick and Company. **Computerized land registration in Ontario - A comparative cost analysis, Report on land registration. Appendix 2**, (Department of Justice) 1971 pp.89.
Location: 01.

71.045

Konecny, Gottfried; **Organizational solution to an integrated multipurpose city surveying system**, (in: Plan. Journal of the Town Planning Institute of Canada, Vol.1971, May,).
Abstract: Argues that with recent advances in technology, the lack of information for integrated, multipurpose urban survey systems is largely due to organizational structure. Reviews the information needs in the areas of surveying, mapping, title transfer, and planning, and suggests an organizational structure capable of providing these needs, using available technology.
Location: 28,36,38.

71.046

Larsen, Hans K.; University of New Brunswick. Department of Economics. APSAMP Programme. Management Committee. **Economics study of the demand for, and gains associated with, the Atlantic provinces co-ordinate control, mapping, land title, and data bank programme**, (University of New Brunswick) 1971, Nov..
Abstract: Evaluates the economics of the LRIS programme of the Martimes in the early stages of the system's development. Discusses user needs, and impact of automation, and considers several case studies within the LRIS.
Location: 07.

71.047

Lieth, H.; Radford, J.S.; **Phenology, resource management and synagraphic computer mapping**, (in: Bioscience, Vol.21,) 1971 pp.62-70.
Location: 09,20.

71.048

Light, Donald L.; United States. Army Topographic Command. Washington, D.C.. **Concept for a gobal topographic information system**, (at: ASP-ACSM Fall Convention, Technical papers) (American Congress on Surveying and Mapping) 1971 pp.434-454.
Abstract: Develops a concept that exploits color and black and white photographic imagery in a digital sense by electronic scanning and storage of addressable picture elements (PIXELS). Several ideas are submitted which illustrate that electronic processing speed, coupled with the Pixel Concept shows

promise for reduction of topographic imagery and information to usable, storable, retrievable, displayable form.

71.049
MacLeod, M.H.; Turner, J.B.; **Semi-automated large scale mapping. Internal report,** (Ministry of Transportation and Communications) 1971.

71.050
McAuliffe, William J. Jr.; **Conferences can be catalysts,** (in: American county, Vol.36, no.8) 1971, Sept. pp.15-16.
Abstract: Suggests that while title companies have made much progress in modernization of their private title plants, comprehensive reform of the entire land record system should provide even larger benefits.

71.051
McAuliffe, William J. Jr.; **Improving land title records,** (in: Title news, Vol.1971, Dec.,).
Abstract: Suggests that while title companies have made much progress in modernization of their private title plants, comprehensive reform of the entire land record system should provide even larger benefits.

71.052
Melander, Christina; Salomonsson, Owe; Selander, Krister; **Data registration, theoretical analysis of basic concepts,** FRIS A:2, (series: Spatial information study, a pilot study), (Sweden. Central Board for Real Estate Data, Development Department) 1971, May.
Abstract: Deals with the theoretical aspects of data referencing, attribute coding, and data storage.
Location: 07.

71.053
Mid Willamette Valley Concil of Governments, Salem, OR.. **Procedures for establishing common street address formats for information assembly by geographic location,** PB-203 066, (in: Staff reports: Information standards,).
Abstract: The procedure manual describes the controls, abbreviations, procedures, and record layouts to implement a system of standardized street address formats for automated data processing. The analysis and findings of the report are limited to the address incorporating the street name and number; rural route and box number format have been excluded.

71.054
Minnesota State Department of Administration. Information Systems Division (MSDOA). **Minnesota Land Information System,** (in: Minnesota's natural resources - Information systems newsletter, no.2) 1971, Mar..
Abstract: Discusses the Minnesota land information system (MLIS), its data, and the availability and uses of these data. Describes the data in the systems as well as the methods for examining and using the data.

71.055
Moyer, D. David, ed.; **Data banks,** (in: Plan journal of the Town Planning Institute of Canada,) (at: National Conference on Urban Surveying and Mapping) 1971, May pp.57-65.
Abstract: Defines data banks, discusses needs for data banks and particularly how they can be of assistance to local government, and reviews efforts to local government, and reviews efforts to co-ordinate urban data bank development in the United States.

Location: 07.

71.056

Nichols, David A.; Dangermond, Jack P.; Postma, Raymond; University of California at Riverside. Department of Geography. **Demonstration of the use of the grid system utilizing multi-source inputs. Technical report,** AD-731 703, TR-T-71-4, 1971, Aug..

Abstract: The paper demonstrates the use of a grid cell digital system to integrate data derived from high altitude aerial photographs with other sources of information (e.g. topography, road maps, geology, etc.). The system has the capabilities of data storage, retrieval, and manipulation. A data bank file possessing spatial characteristics can be displayed with computer graphics, and manipulated in the computer. The demonstration involves the application for a regional park location model.

71.057

Olsson, A.; Selander, Krister; **Pilot study. Spatial information system, dot maps by computer,** FRIS, C:2, (Central Board for Real Estate Data) 1971.

71.058

Ontario. Department of Justice. Ontario Law Reform Commission. **Report on land registration,** (Queen's Printer and Publisher) 1971.

Abstract: Compares title registration and title recording and discusses technical and management requirements for a registry system. Considers the economics of a computerized cadastral system.

Location: 01.

71.059

Ontario. Department of Municipal Affairs, Assessment Division. Assessment Standards Branch. **Geocoding and assessment: A resource paper,** (Ontario. Department of Municipal Affairs. Assessment Standards Branch) 1971.

71.060

Parker, James L.; **Information retrieval with large-scale geographic data bases,** (University of British Columbia. Department of Computer Sciences) 1971, June.

71.061

Rhind, David W.; **Automatic contouring - An empirical evaluation of some differing techniques,** (in: Cartographic journal, Vol.8,) 1971 pp.145-158.

Location: 20, 28, 36.

71.062

Risk, R.C.B.; **Records of title to land: A plea for reform,** (in: University of Toronto law journal, Vol.21,) 1971 pp.465-497.

71.063

Rogers, Clark D.; **Survey summary: Urban planning information systems,** (at: 1970 URISA proceedings) (Urban and Regional Information Systems Association) 1971 pp.35-45.

Abstract: Discusses information systems for urban planning applications in physical and transportation systems at state, regional, county and municipal levels.

71.064
Unit, Royal College of Art. Experimental Cartography; **Automatic cartography and planning**, (Royal College of Art. Experimental Cartography Unit) 1971.
Abstract: Discusses the benefits of automated mapping and mapping data banks. Describes geocoding, digitizing, data processing and data display. Reviews other research in automated mapping and spatial data handling. Includes a section with illustrations of sample map output.
Location: 20.

71.065
Schumacher, B.G.; **Urban COGO: A geographic based land information system**, (Massachusetts Institute of Technology, Urban Systems Laboratory) 1971.
Abstract: Discusses urban information systems with emphasis on geocoding

71.066
Sholfield, Thomas G.; **Geographically-based planning and evaluation system**, (at: 1971 URISA proceedings) (Urban and Regional Information Systems Association) 1972.
Abstract: Presented is an example of a city with ever-widening spans of urban problems, in the process of designing an information system that will enable management to establish maximum control, an outline of the systems evolution in Portland, with illustrations in several key areas of responsibility is presented.

71.067
Spurr, Peter T.; **Land geocoding and urban data banks. (In preliminary land study ancillary papers)**, (CHMC. Policy Planning Division) 1971, May.
Location: 01.

71.068
Symons, D.C.; National Capital Commission. Research and Computer Services, Ottawa, Ont.. **Grid co-ordinate systems and their use in municipal information management**, (at: COMRIM '71. Proceedings of the First Annual Conference) (Committee on Municipal and Regional Information Management) 1971 pp.197-220.
Abstract: Discusses parcel geocoding in the NCC Information System, compares urban and rural geocoding procedures, and describes data retrieval.
Location: 07, 01.

71.069
Taylor, D.R.F.; Carleton University. Department of Geography, Ottawa, Ont.. **Computer atlas of Kenya with a bibliography of computer mapping**, 1971, Jan..
Abstract: Presents an application of automated mapping. Discusses mapping software used to produce the atlas, which displays socio-economic data concerning Kenya.
Location: 20.

71.070
Tomlinson, Roger F., ed.; **Geo-information systems and the use of computers in handling land use information. Proceedings of the United States Geological Survey Conference on Land Use Classification Systems. Washington, D.C. 1971**, (United States Geological Survey and National Aeronautics and Space Administration) 1971.
Location: 01.

71.071
Touma, Edward A.; **Automation organization, classification and retrieval of title information**, (in: Title news, Vol.50, no.1) 1971, Jan. pp.26-29.
Abstract: Reviews several Research and Development programs and projects that relate to title records. Includes CULDATA proposal, Washington, D.C. DATABANK, microfilm retrieval systems, as well as others.

71.072

United States. Department of Commerce. Bureau of the Census. **Geocoding with ADMATCH: A Los Angeles area experience,** 14, (series: Census use study), (Government Printing Office) 1971, Jan..

Abstract: Describes the use of ADMATCH with several geographic base files in Los Angeles, includes discussion of computer hardware requirements, system operating costs, and tests for matching assessor and tax legal files using ADMATCH software.

71.073

United States. Bureau of the Census. **Geographic base files - plans, progress and prospects. Conference proceedings. Jacksonville, FL., Apr. 1-2, 1971,** (series: Computerized geographic coding series), (United States, Department of Commerce) 1971, Sept..

Abstract: A collection of papers concerning local experiences in the use of U.S. Bureau of the Census geocoding files.

Location: 07.

71.074

United States. Bureau of the Census. **Use of address coding guides in geographic coding-Case studies. Wichita, KS. Nov. 19-20, 1970,** COM-71-00320, (United States. Department of Commerce) 1971, Mar..

Abstract: The report is a summary of a conference on the use of address coding guides in geographic coding. The theme of the conference was a mutual exchange of experiences between several metropolitan areas that have been working and gaining experience in the local use of address coding guides. It also exposed representatives from various state and federal agencies not only to local experiences, but also to the variety of uses being made of these guides.

Location: 07.

71.075

United States. Department of Transportation. Federal Aviation Administration. **Location identifiers,** (U.S. Government Printing Office) 1971.

71.076

United States. House of Representatives. **To provide for a national environmental data system,** (at: 92nd Congress, 1st Session, H.R. 56) (U.S. Government Printing Office) 1971.

Abstract: A bill to create a data system to develop and utilize information needed to support wise and equitable management of the environment. The national environmental data system would function as the central national agency for selection, storage, analysis, retrieval, and dissemination of information knowledge, and data related to environment. Primarily a referral and coordinating operation, drawing on existing systems as much as possible.

71.077

Wellar, Barry S., Ed.; Graff, Thomas O.; University of Kansas. Department of Geography. **Geographic aspects of information systems: Introduction and selected bibliography,** (series: Council of Planning Librarians exchange bibliography), (Council of Planning Librarians) 1971, Nov..

Abstract: Presents a bibliography concerning GIS by author under general subject headings.

Location: 01, 05.

71.078

Williams, John L.; Wilkie, John B.; Hubbard, Carleton L., Jr.; **Workshop sessions: Multicounty consolidation of title information**, (in: Title news, Vol.1971, Jan.,) pp.35-40.

Abstract: Four title company officials from various states discuss title systems serving multi-county areas.

71.079

Willis, Willis F.; **Planning, design and implementation of a computer-based land titles system**, (at: Presented to the National Association of County Recorders and Clerks) (Land Registration and Information Service) 1971, July.

Abstract: Reviews the position of county land records in the Maritime Provinces of Canada during the mid 1960's and the effects an archaic registry system had on the economy and the merchantability of the title. Deduces several basic causes and contributing factors that must be weighed in any solution. Using the Maritime Provinces as an example, the planning, design, and implementation of a land titles system are outlined illustrating the master file on the computer and the method of updating and maintaining the file.

Location: 01.

71.080

American Congress on Surveying and Mapping. Technical papers from the 1971 ASP-ACSM Fall Convention. San Francisco, CA. Sept. 7-11, 1971, (American Congress on Surveying and Mapping) 1971.

Abstract: A collection of papers covering such topics as: mapping programmes, GIS, and surveying techniques.

71.081

Computer mapping for policy analysis and decision making, (in: Metropolitan bulletin, Vol.1971, Aug.-Sept.,) pp.1-3.

Abstract: Describes a computer generated mapping tool for aiding decision makers, using 1970 census of population for Washington, D.C. mapping unit is census tract.

71.082

Special section: Land records, (in: American county, Vol.36, no.8) 1971, Sept. pp.6-17.

Abstract: Presents four articles on land records, including a case study of title recording in Forsyth County, N.C., a national survey of recording offices, the need for compatible parcel identifiers, and a preview of the Atlanta Clipp Conference.

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72.001

Aangeenbrug, Robert T.; **Essay on the minimum requirements of a geographic information system,** (at: Geocoding '71. Papers from Working Session on Geographic Base File Developments) (Urban and Regional Information Systems Association) 1972 pp.67-71.

Abstract: Within the present state-of-the-art, the minimum requirements of any given geographic information system can be identified. Most geographic base files and related files that have been used focus on the maintenance of land use information systems and have frequently been associated with the more static information gathering efforts related to land use data banks. The minimum requirements in a geographic information system include the following: (1) Definition of significant geographic entities (2) An indexing system which links geographic base files to other key file structures within an integrated system, (3) the retrieval of geographic entity by geographic entity, (4) longitudinal or temporal transferability, (5) state-of-the-art transferability.

72.002

Alberta. Department of Municipal Affairs. Research Planning Section. **Alberta urban assessment - Data bank,.**

Abstract: Identifies potential uses of urban assessment data for planning applications and discusses problems in data referencing and attribute codes for computer storage.

Location: 07.

72.003

Alberta. Ministry of Industry and Commerce. **Land seminar proceedings. Interdepartmental land seminar. Two volumes. Edmonton, Alta. Feb. 17, 1972,** (Alberta. Ministry of Industry and Commerce) 1972.

Abstract: A collection of seminar papers on some current (1972) Alberta government land-related programmes and regulations, and a listing of land-related government programmes. Describes several allocation and development systems (forestry, water, mineral, land use) as well as conservation and planning applications

Location: 01.

72.004

Alberta. Office of the Provincial Auditor. Data Processing Centre. **Feasibility study: Alberta Land Information System,** (Alberta. Office of the Provincial Auditor, Data Processing Centre) 1972, Feb..

Abstract: Provides certain documentation necessary to research the possibilities of an Alberta land information system, including a list of potential participants, a comprehensive departmental cross section of user and contributor land data, a feasible data processing approach to the problem and relevant cost estimates as they relate to data processing hardware.

Location: 01.

72.005

Augustin, Paul; Gourinard, Yves; Cambon, Francis; Centre National de la Recherche Scientifique. Service de la Carte de la Vegetation, Toulouse, France. **Management of natural resources through automatic cartographic inventory. Progress report no. 1, Aug-Sep 72,** E72-10303,.

Abstract: The author has identified the following significant results. Return beam vidicon and multispectral band scanner imagery will be correlated with existing vegetation and geologic maps of southern France and northern Spain to develop correspondence codes between map units and space data. Microclimate data from six stations, spectral measurements from a few meters to 2 km using ERTS-type filter and spectrometers, and leaf reflectance measurements will be obtained to assist in correlation studies.

72.006

Barb, Charles E., Jr.; Urban Data Processing Incorporated, Cambridge, MA.. **GEOCODING-72. Papers presented at the Geographic Base File Special Interest Group Sessions, 1972 Annual Conference of the Urban and Regional Information Systems Association,** PB-211 744,.

Abstract: The proceedings include a collection of papers dealing with the following five topic areas within the technology: network applications of geographic base files, the utility of coordinate products from geographic base files, geographic base file maintenance methodologies, geographic base files systems management alternatives, and data banking as it applies to geographic base files.

72.007

Bathke, William L.; Carter, R.S.; Battelle Memorial Institute. **Geocoding and the urban environment: New approaches,** (at: 19th International Meeting of the Institute of Management Sciences) (Battelle Pacific Northwest Laboratories) 1972.

Abstract: Describes a method of extending current (1972) geocoding capabilities through data matching techniques to enhance data manipulation and analysis capabilities.

Location: 07.

72.008

Becker, Patricia Cousens; **Rise and fall of the Master Parcel File,** (at: 1971 URISA proceedings) (Urban and Regional Information Systems Association) 1972 pp.12-24.

Abstract: In 1967. The staff of the Detroit community renewal. Program conceived the idea of creating and implementing a master parcel file for the city of Detroit. In broad form, the system involved building a computerized file of all information related to the land parcel as the unit of analysis. Two-and one-half years and half a million dollars later the project was abandoned. This paper addresses the questions of what happened, what progress, if any, was made, and what lessons were learned that will help avoid similar failures in the future.

72.009

Bernholtz, Allen; Fosburg, Steve; **Portrait of the computer as a young city planner,** (at: On-Line 1972 Conference on Interactive Computer Graphics) (Allen Bernholtz Consultants, Incorporated) 1972.

Abstract: Concerns spatial allocation related to urban planning applications using LOKAT programmes.

Location: 01,07.

72.010

Bhagwat, Arun P.; **Graphic data bank,** (in: American county, Vol.37, no.2) 1972, May pp.44-47.

Abstract: Describes a system that can merge map data from various local government agencies and display these data on a computer driven graphic display.

72.011

Black, Stephen; **Overview: Sweden,** (in: BURISA newsletter, no.2) 1972, Dec. pp.8.

Abstract: Reviews the efforts in Sweden to develop a land data bank in terms of economics, and geocoding problems.

Location: 07.

72.012

Blanchet, P.H.; Godwin, Colin I.; University of British Columbia, Vancouver, B.C.. **GEOLOG System: For computer and manual analysis of geologic data from porphyry and other deposits,** (in: Economic geography, Vol.67, no.6) 1972, Sept.-Oct. pp.796-813.

Abstract: Concerns GEOLOG, a system for recording geological data and discusses the format used for description of the data.

Location: 20,21,28,36.

72.013

Boeing Computer Services, Incorporated. Seattle, WA.. **Natural Resources Information System. Design analysis,** PB-211 383, USGS Do 72 014, (Boeing Computer Services, Incorporated) 1972, May.

Abstract: Describes the computer-based system (Natural Resource Information System) designed and developed for Bureau of Indian Affairs and the Bureau of Land Management. The system stores, processes, and displays map data relating to natural resources. Also described the design analysis effort and summarizes the rationale behind major design decisions, including map processing, cell vs. polygon, choice of classification systems, mapping accuracy, system hardware and software language.

Location: 17.

72.014

Boeing Computer Services, Incorporated. Seattle, WA.. **Natural Resource Information System. Volumes 1 and 2. Overall description and system operating procedures and instructions - Final report,** PB-211 381 and PB-211 382, (Boeing Computer Services, Incorporated) 1972, Apr..

Abstract: Provides a total computer software system description for the prototype Natural Resource Information System designed to store, process, and display data of maximum usefulness to land management decision making. Describes programme modules, computer file design, file updating methods, digitizing process, and paper tape conversion to magnetic tape. Operating instructions for the system, data output, printed output, graphic output, also discussed. The system includes graphic input and display, the use of remote sensing as a data source, and is useful at multiple management levels.

Location: 46.

72.015

Bottini, Nicholas A.; Late, John; Kreutzer, Albert; Creswell, Claude; Information, Incorporated, Rome, N.Y.. **Cartographic data base design study. Volume 1 - Concept. Volume 2 - Implementation. Volume 3 - Documentation. Final reports Aug. 70-Jan. 72,** AD-749 496, 497, 498, TR-72-1223-Vol-1, -2, -3, 1972, Aug..

Abstract: Volume 1 describes the concept and experimental implementation of a digital cartographic data base. Volume 2 discusses how this was accomplished by describing structure, records, data elements, hardware, software, programmes, etc. Volume 3 presents the background of the work accomplished and the organization of the report. A description of how to operate the Cartographic Data Base Program is also provided.

72.016

Boyle, A. Raymond; Sharp, John V.; University of Saskatchewan. Department of Electrical Engineering, Saskatoon, Sask.. **Basis of assessment of equipment systems,** (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.668-709.

Abstract: Provides a means of geographic information system assessment from an economic viewpoint and from an operator's viewpoint by discussing specific aspects of device software and hardware (speed, accuracy, reliability).

Location: 07.

72.017

Boyle, A. Raymond; University of Saskatchewan. Department of Electrical Engineering, Saskatoon, Sask.. **Equipment for spatial data processing,** (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.633-667.

Abstract: Discusses past, current (1972) and future devices and systems in spatial data processing in relation to digitization, interactive display systems and drafting.

Location: 07.

72.018

Boyle, A. Raymond; Keir, A.; Tomlinson, Roger F., ed.; Van den Driessche, R.; Yoeli, Pinhas; **Geographic information systems,** (at: Geographical data handling/environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.1151-1200.

Abstract: Discusses the methodology of GIS with respect to data collection and updating, storage, analysis and output, and describes various groups of GIS (SYMAP, FRIS, NARIS, DIME) with some typical examples of these groups.

Location: 07.

72.019

Boyle, A. Raymond; University of Saskatchewan. Department of Electrical Engineering, Saskatoon, Sask.. **Systems of automatic cartography,** (at: Geographical data handling/environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.1125-1150.

Abstract: Lists systems used in automated mapping with descriptions of use or purpose, hardware required, response time, output quality, costs, etc.

Location: 07.

72.020

Burk, C.F., Jr.; **Computer-based geological data systems: Emerging basis for international communications,** (in: Canadian Petroleum, Vol.13, no.3) 1972 pp.32-36.

Location: 21,23,25,26,27,28,34.

72.021

Canada. Department of the Environment. Canadian Transportation Commission. **CROPP**, no.1 (series: Occasional paper), 1972, Apr..

Abstract: Considers CROPP, a coordinate file which can be merged with other files. Discusses its applications in data banks and in mapping.

Location: 01.

72.022

Canada. National Capital Commission. Computer Information Services. **Photographic production of digitized map information,** (Canada. National Capital Commission. Computer Information Services) 1972, Nov..

72.023

Canada. Regional Planning Information Systems Division. **Geo-information system,**.

Abstract: A collection of papers on the CGIS. Describes data retrieval and data encoding and provides examples of the system's capabilities.

Location: 10.

72.024

Canada. Statistics Canada. Methodology and Systems Branch. **GRDSR (The Geographically Referenced Data Storage and Retrieval System), a new method of assembling statistical information by user-specified areas: An introduction**, (Canada. Ministry of Industry, Trade and Commerce) 1972, June.

Abstract: Discusses the GRDSRS, designed for flexible data storage and Data retrieval. Describes the system's components, geocoding technique, and file structures as well as the present and potential applications of the GRDSRS.

Location: 01.

72.025

Chrzanowski, Adam; **Model of a horizontal control network for integrated urban surveys**, (University of New Brunswick, Department of Surveying Engineering) 1972.

Abstract: Argues that while need for an integrated survey system which can serve as a basis for a centralized data bank suppling information on relative position of topographical, physical, legal, and sociological data has been recognized, implementation of such systems has been delayed due to lack of model survey control system in urban areas.

72.026

City of Charlotte, N.C. USAC Project. **Land records function concept**, PB-218 152/7, USAC-CNC-0110, MIS-2301/012/000, (City of Charlotte, N.C.) 1972, June.

Abstract: The report documents the Charlotte Consortium's conceptualization of the city's land records function, dealing with the collecting, storing, maintaining and making easily accessbile information on the ownership of property, property rights, transfer of property, etc. Intended to serve as a basis for and facilitate the design of modules related to the subject area, this document provides an in-depth operational disussion of the responsibilities defined for the function, its components and processes, and relates how information systems technology may be used in the administration of these responsibilities.

72.027

City of Des Moines, IA.. **Geoplanning Research Program. Systems analysis Task/report**, PB-223 187/6, USAC-DM13-0001-REV, (City of Des Moines, IA.) 1972, Nov. 30.

Abstract: The report is part of a USAC series produced by the city of Des Moines, covering activities from systems analysis through implementation and evaluation of urban information systems. The Systems Analysis Task 1 Report reviews USAC geocoding objectives and status, analyzes the real property system in relation to the prototype demonstration and analyzes the potential for geocoding in Polk County/Des Moines operations. System analysis involves a detailed systematic analysis of the decisional and informational resources, practices, and requirements of those organizational elements and elected officials of local government which depend upon geocoding, geoinformation, and geoplanning resources technology. The systems analysis covers existing and potential geocoding, geoinformation, and geoplanning of the municipal government.

Location: 07.

72.028

City of Hamilton. Planning Department. Hamilton, Ont.. **Planning data systems**, (City of Hamilton. Planning Department) 1972, Oct..

Abstract: Concerns a proposed data bank and information system for the City of Hamilton. Discusses the potential benefits and the planned development of the system.

72.029

Corbett, James P.; Wellar, Barry S., ed.; United States. Department of Commerce. Statistical Research Branch. University of Kansas. **Potential for linking all types of geographic base files**, (at: Perspectives on geographic aspects of information systems. Annual meeting of the Association of American Geographers. Special Session-Geographic Research in an Information Systems Context) (University of Kansas. Institute of Social and Environmental Studies) 1972, Dec. pp.69-79.

Abstract: Describes file structures of geographic files, geocoding, data accuracy, and data matching. Also provides a data encoding example.

Location: 07.

72.030

County of Fairfax, VA.. **Final report covering phases 1 and 2**, (series: Urban Development Information System (UDIS)), (County of Fairfax, VA.) 1972, Mar. 15.

Abstract: Details the first two phases of a three-phase study for the design and implementation of UDIS. Provides a system overview and a detailed system description. Includes examples of automated mapping and other forms of output.

Location: 07.

72.031

Cowie, S.P.; **Spatial Data Processing Project**, (at: Proceedings of the Second Urban Data Management Symposium) (Planning and Transport Research and Computation Co. Ltd.) 1972.

72.032

Crisp, Colin F.G.; City of Victoria, B.C.. **Planning data bank for small cities: Victoria, B.C.**, (at: COMRIM 1972. Proceedings of the Second Annual Conference) (Committee on Municipal and Regional Information Management) 1972 pp.129-135.

Abstract: Concerns the use of data banks in small cities for planning applications. Describes the data types in Victoria's files, data needs, and updating.

Location: 07.

72.033

Crowder, Robert; State of New York. Office of Planning Services. Division of Plans and Analysis. **LUNR (Land Use and Natural Resource inventory of New York State): What it is and how it is used**, (State of New York. Office of Planning Services) 1972, May.

Abstract: Assists planners, government officials and private citizens in making use of lunr, (land use and natural resource inventory), and information system showing detailed land use data in both computer graphic (247 acre grid cells) and tabular form, for all of the state of New York.

Location: 07.

72.034

Dean, R.D.; Lucia, D.; Pearson, E.; **MATCOG Information System**, (at: 1972 URISA conference proceedings) (Urban and Regional Information Systems Association) 1972 pp.282-314 .

Abstract: The Memphis Metropolitan areas outline for developing a regional information system presents a plan that will assist the area in decision making which will ultimately benefit the entire community. This is the tentative framework and conceptual design, since the system is still on the drawing board. Examples can be sighted of the system functioning, as if it were real, showing the integrated processes of the systems and sub-systems, as well as the reasons for choosing certain components and data files.

72.035

Denenberg, Stewart A.; Corbin, Calvin C.; Alsberg, Peter A.; **NARI: A Natural Resource Information System**, (University of Illinois. Advanced Computation Center) 1972.

72.036

Dial, O.E.; **Geocoding: A USAC concern**, (Urban Information Systems Inter-Agency Committee) 1972.

72.037

Dueker, Kenneth J.; **Framework for encoding spatial data**, (in: Geographical analysis, Vol.4, no.1) 1972 pp.98-105.
Location: 20,28,36.

72.038

Dueker, Kenneth J.; Horton, Frank E.; **Information needs of the continuing urban transportation planning process**, (University of Iowa. Institute of Urban and Regional Research) 1972.

72.039

Dueker, Kenneth J.; **Statewide land information systems: Design considerations**, (series: Technical report series), (University of Iowa. Institute of Urban and Regional Research) 1972, July.

72.040

Dueker, Kenneth J.; Horton, Frank E.; **Utility of remote sensing data for urban land use planning**, (series: Technical report series), (University of Iowa. Institute of Urban and Regional Research) 1972, Feb..

72.041

Edson, Dean T.; **Examples of spatial data display**, (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.917-1123.

Abstract: Presents detailed descriptions of the currently (1972) available techniques in spatial data display (with the aid of illustrations of output examples) in terms of capabilities and limitations hardware requirements and data requirements for various types of printer, plotter and CRT displays.

Location: 07.

72.042

Farnsworth, George L.; United States. Bureau of the Census. **SCRIS experience with merging census data and local data**, (at: Urban and regional information systems: Information systems and political systems. Ninth Annual Conference of the Urban and Regional Information Systems Association) (URISA and Stockton State College) 1972 pp.355-362.

Abstract: Describes the problems encountered in data merging by the Southern California Regional Study. Discusses the benefits of merging census data and local data.

Location: 20.

72.043

Flemming, L.N.; **Comprehensive land data bank for Prince Edward Island,** (P.E.I. Department of the Environment and Tourism. Land Use Services Centre) 1972.
Location: 01.

72.044

Garrison, W.L.; Hummon, Norman; University of Pittsburgh. School of Engineering. **Meeting social science and social decision-makers' needs for small area data,** (at: Perspectives on geographic aspects of information systems. Annual meeting of the Association of American Geographers. Special Session - Geographic Research in an Information Systems context) (University of Kansas. Institute for Social and Environmental Studies) 1972, Dec. pp.7-21.

Abstract: Discusses small area data systems, data needs, data collection, use of census data, user needs and geocoding.

Location: 07.

72.045

Glassman, N.; Nergut, E.G.; Quigley, D.F.; United States. National Bureau of Standards. Technical Analysis Division, Washington, D.C.. United States. Department of Housing and Urban Development. Urban Information Systems Inter-Agency Committee, USAC. **Broad perspective of the Geographic Based Information System (GBIS) in the urban environment. Special technical report,** PB-211 204, USAC-NBS3-0001, 1972, Jan. 12.

Abstract: The report is part of a USAC series of special technical reports and a final project report by the National Bureau of Standards USAC Project. The purpose of the report is to provide managers, planners, and other technical people with a broad perspective of the uses of geographic data and of the geographic based information systems which facilitate their use. More specifically, the report focuses principally on applications in the municipal environment which will enhance operational, socioeconomic, and management planning activities by using geographic data and systems.

72.046

Graphic System Design and Applications Group. **Preliminary user's notes on interactive display system for manipulation of cartographic data,** (University of Saskatchewan, Electrical Engineering Department) 1972.

72.047

Grist, M.W.; **Digital ground models: Account of recent research,** (in: Photogrammetric record, Vol.70, no.4) 1972, Oct. pp.424-441.
Location: 20.

72.048

Gur, Yehuda; **Computer system for interactive analysis and planning of urban and transportation systems,** (University of Illinois at Chicago Circle) 1972.

72.049

Herner, S., ed.; Vullucci, M.J.,ed.; **Oil and gas field study,** (series: Selected federal computer-based information systems), (Information Resources Press) 1972 pp.124-128.

72.050

Hite, James, C.; **South Carolina land use information system: An overview,** 355, (Clemson University. Department of Agriculture, Economic and Rural Sociology).

Abstract: Concerns the systems development of a resource information system for South Carolina. Discusses data base development, data referencing and information content of the data base.

72.051

Horton, Frank E.; **Application of remote sensing technique to inter and intra urban analysis. Final report,** 1972, May.

72.052

Hubaun, A.; COGEODATA, International Union of Geological Sciences. **Geological data files/Survey of international activity. Report of COGEODATA Committee on Storage, Automatic Processing and Retrieval of Geological Data of the International Union of Geological Sciences (IUGS),** no.8 (series: CODATA bulletin), (International Council of Scientific Unions. Committee on Data for Science and Technology) 1972, Nov..

Abstract: Provides a list of current (1972) geological data files from an international survey in terms of name and location of the organization in charge, title, theme, physical storage, state and availability of the geological files. Also describes some representative files in more detail.

Location: 01.

72.053

Hysom, John L. Jr.; **Urban Development Information System to aid planning and zoning decision making,** (Urban and Regional Information Systems Association) 1972 pp.336-355.

Abstract: An urban development information system in Fairfax county is being developed which will monitor physical growth in terms of housing by price and type, and also in terms of people, by numbers, ages and incomes. Current building activity will also be monitored. Finally, from all of this information, short term growth for small areas will be projected. The system is based upon three files--a parcel file, a dime reference file and a sanitary sewer file. Important to the success of UDIS is its place in the organizational structure of the county, it is presently under the county executive good public relations has also been an important non-techanical consideration.

72.054

Hysom, John L. Jr.; Koop, S.F.; Rucker, W.B.; Green, D.C.; Leftoff, L.; Fairfax County, VA.. **Urban Development Information System. Final report on Phases 1 and 2,** PB-212 628,.

Abstract: The Urban Development Information System (UDIS) provides a geographical reference to an accurate land parcel file which enables both public officials and private developers, as well as interested citizens, to monitor the on-going growth process in an urbanized area. The primary purpose of UDIS is to facilitate the process of decision-making as it relates to land use and urban planning. To county officials and to private builders, the system provides a reliable tool that will help officials direct the growth process. It will also assist the private development community in making financial decisions of great consequence that, in the past, have occasionally run contrary to the community's interest.

72.055

International City Management Association. **Computerized urban development information system,** (series: Urban data service report), (International City Management Association) 1972.

Abstract: Describes the urban development system developed in Fairfax County, Virginia, a parcel-based system.

72.056

Ion, Robert J.; **Geographic base file developments and the geocoding program of Statistics Canada**, (at: 1971 URISA Workshop on Geographic Base File Development) (Urban and Regional Information Systems Association) 1972 pp.85-87.

72.057

Jaro, Matthew A.; **OS ADMATCH**, (series: Census use study), (United States. Bureau of the Census).

Abstract: Describes admatch/OS, an advanced address matching software system for use on large 360 computers operating under the IBM System/360 operating system (OS).

72.058

Kiefer, Ralph W.; Robbins, Michael L.; **Computer-based land use suitability maps**, (at: 1972 ASCE Annual Environmental Engineering Meeting) 1972, Nov..

72.059

Kingston, Peter; La Garde, V.; IBM Canada Limited, Halifax, N.S.. **Spatial data massaging techniques**, (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union, Commission on Geographical Data Sensing and Processing) 1972 pp.721-757.

Abstract: Considers processing of spatial data during recording and storage with respect to data smoothing, elimination of distortion, rotation and translation of data, matching of edges of separate map sheets, correction of errors in the recording of data, and the means of estimating error in spatial data.

Location: 07.

72.060

Lafebvre, J.J., et al.; **Automated creation of weighting areas: Use of geocoding in distrification**, (at: 1972 URISA proceedings. Volume 2) (Urban and Regional Information Systems Association) 1972 pp.219-226.

Location: 01.

72.061

Lafleur, Thomas G.; **Low volume digitizing**, (at: 1971 URISA Workshop on Geographic Base File Developments proceedings) (Urban and Regional Information Systems Association) 1972 pp.79-84.

Abstract: Discusses a manual method of digitizing node points. This method would be utilized for the maintenance of the dime file. This method as well as the alternate method discussed are good only for very low volume digitizing.

72.062

Leachtenauer, J.; Hirsch, R.; Williams, V.; Tucker, R.; Boeing Computer Services, Incorporated. Seattle, WA.. **Natural Resource Information System. Remote sensing studies. Final report**, PB-211 384,.

Abstract: A major design objective of the Natural Resource Information System entailed the use of remote sensing data as an input to the system. Potential applications of remote sensing data were therefore reviewed and available imagery interpreted to provide input to a demonstration data base. A literature review was conducted to determine the types and qualities of imagery required to satisfy identified data needs. Ektachrome imagery available over the demonstration areas was reviewed to establish the feasibility of interpreting cultural features, range condition, and timber type. Using the same imagery, a land use map was prepared for the demonstration area. Finally, the feasibility of identifying commercial timber areas using a density slicing technique was tested on multispectral (simulated ERTS) imagery available for a portion of the demonstration area.

Location: 17.

72.063

Lewis, Phillip H., Jr.; University of Wisconsin. Institute for Environmental Studies. **Data needs and data manipulation (faculty land use problem definition seminar),** PB-281 146/1ST, 8C, (series: Institute for Environmental Studies Working Papers). (University of Wisconsin. Institute for Environmental Studies) 1972, Dec..

Abstract: The University of Wisconsin Faculty Seminar Subgroup for Data Gathering, Coordination and Retrieval, Planning and Design, Criteria and Process, met weekly to conduct a three-phase seminar. Phase I involved discussions delineating the major physical land use impacts presently altering Wisconsin's landscape. The concept of critical areas and concerns were developed and a list was established. Phase II consisted of discussion and description of the need for relevant data to effect the planning process and the formation of two subcommittees to establish social, biological, and physical data recommendation lists. Phase III included discussions concerning implementation and procedures which could aid the planning process. The Committee concluded that some form of statewide, automated geo-information system should be established which would include data coordination, data collection, data manipulation, and data retrieval systems.

Location: 17.

72.064

Magraw, Daniel B.; State of Minnesota. Department of Administration. **Integrative, coordinative, facilitative, and administrative roles required of state governments in the development of information systems with a spatial component,** (at: Perspectives on geographic aspects of information systems. Annual Meeting of the Association of American Geographers, Special Session - Geographic research in an information systems content) (University of Kansas. Institute for Social and Environmental Studies) 1972, Dec. pp.35-43.

Abstract: Considers system development integrated state information systems in terms of data collection, economics, data retrieval, and technology exchange.

Location: 07.

72.065

Marble, Duane F.; Calkins, Hugh W.; Dueker, Kenneth J.; Gilliland, J.; Saloma, J.; **Geographical information systems design: Case studies,** (at: Geographical data handling/environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.1272-1281.

Abstract: Presents two case studies in geographic information systems, Minnesota Land Management Information System (MLMIS), and URBAX each of which describes the system and evaluates it in terms of cost and use.

Location: 07.

72.066

Marble, Duane F.; Calkins, Hugh W.; Dueker, Kenneth J.; Gilliland, J.; Saloma, J.; **Geographical information system design: Concepts and methods,** (at: Geographical data handling/environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.1240-1271.

Abstract: Considers problems and procedures in information system design and evaluation which are of particular importance in geographic information systems. Provides general procedures for determining user needs and objectives, system boundaries, relevant design variables, measures of system effectiveness, and potential costs.

Location: 07.

72.067
Marble, Duane F.; Calkins, Hugh W.; Dueker, Kenneth J.; Gilliland, J.; **Saloma, J.; Introduction to the economics of geographical information systems,** (at: Geographical data handling/environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.1202-1239.

Abstract: Concerns the broader issues and concepts of use and economics in information system design and evaluation, and presents a three-stage model for system development and evaluation.

Location: 07.

72.068
Meyer, Morton A.; Wellar, Barry S., ed.; United States. Bureau of the Census. Geography Division. Washington, D.C.. University of Kansas. **Correction, Update and Extension (CUE) of the Census Bureau's Geographic Base (DIME) File,** (at: Perspectives on geographic aspects of information systems. Annual Meeting of the Association of American Geographers, Special Session - Geographic research in an information systems context) (University of Kansas. Institute for Social and Environmental Studies) 1972, Dec. pp.47-67.

Abstract: Concern the CUE programme for file maintenance. Discusses DIME file structures, and geocoding.

Location: 07.

72.069
Meyers, Charles R., Jr.; Voelker, A.H.; **Introduction to computer display applications using spatial data,** (at: Geographical data handling/environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.891-916.

Abstract: Describes the role of computer display within the range of spatial data activities from digitizing and processing of data, to synthesizing of data to producing simulation models. Examples of various displays are illustrated.

Location: 07.

72.070
Millet, Michael J.; **360/20 computer mapping programme,** (at: 1971 URISA Workshop on Geographical Base File Developments) (Urban and Regional Information Systems Association) 1972 pp.62-66.

72.071
Meller, Sven G.; National Swedish Institute for Building Research, Stockholm. **System for describing and classifying information concerning land forms,** PB-212 774, D8:1972,.

Abstract: All planning of a landscape for some purpose such as community development of agriculture-forestry is preceded by and based on an inventory at three strata of the information relating to the landscape, physical geography, urban geography and present land use. The future land use is studied and laid down in the plan. The report contains an account of an outline system for the description and classification of the natural and the cultural landscape as a step in the formulation of a Swedish system of aerial photographic interpretation.

72.072
Nake, F.; Peucker, Thomas K.; **Interactive maps in urban research. Report after year one,** (University of British Columbia) 1972.

72.073

Ontario. Ministry of Consumer and Commercial Relations. **Land registration system: System objectives Internal report**, (Ontario Ministry of Consumer and Commercial Relations) 1972.

72.074

Orning, George W.; Maki, Les; **Land management information in Northwest Minnesota**, (Minnesota Land Management Information System) 1972.

72.075

P.E.I. Department of the Environment and Tourism. Land Use Service Centre. **Comprehensive land data bank for Prince Edward Island. A draft proposal**,.

Abstract: Presents a proposal to provide an accurate planning data base. Details the attribute codes for data classification

Location: 07.

72.076

Peters, Ivan A.; **Toward a compatible land identifier**, (in: Title news, Vol.51, no.8) 1972, Aug. pp.4-5, 11-12.

Abstract: Reviews efforts to develop an improved land title record system, then concentrates on the Clipp Conference held in Atlanta in early 1972. Presents several conclusions, from the viewpoint of a title insurer, as to prospects of developing uniform parcel identifier systems.

72.077

Peucker, Thomas K.; **Computer cartography**, no.17 (series: Commission on College Geography resource paper), (Association of American Geographers) 1972.

Abstract: Discusses the theory behind automated mapping in terms of topographic or thematic surfaces and surface processing, data display techniques, file structures, and applications of automated mapping.

Location: 07.

72.078

Peucker, Thomas K.; Simon Fraser University. Department of Geography, Burnaby, B.C.. **Computer cartography: A working bibliography**, (series: University of Toronto. Department of Geography discussion paper series), (University of Toronto. Department of Geography) 1972, Sept..

Abstract: Bibliography on automated mapping with listings by author.

Location: 20.

72.079

Podehl, W.M.; **Geocoding systems management: The Canadian approach**, (at: Urban and regional information systems: Information research for an urban society. Volume 2. Tenth Annual Conference of the Urban and Regional Information Systems Association (URISA).) (Urban and Regional Information Systems Association) 1972 pp.283-286.

Abstract: The system components to be managed in RDSR are the creation and updating of GBF'S, the geocoding of data files bearing postal addresses and the tabulation of geocoded data for arbitrary areas of particular importance in the creation and updating of the GBF'S. Municipal agencies supplied base maps and street index listings, but coding and digitizing was done in statistics Canada. The existing GBF'S are accurate and do not require further refinement. All system components--GBF'S and computer programs--are being made available to federal, provincial and municipal agencies, but few agencies have had experience yet with the use of GRDSR on local data. The system has become operational on the complete 1971 Canada census data and is demonstrating its reliability once this has been recognized by local agencies, Statistics Canada expects more requests for turning over the system to local level applications.

72.080

Podehl, W.M.; **GRDSR: The Canadian geocoding system,** (at: 1972 URISA proceedings. Volume 2) (Urban and Regional Information systems Association) 1972 pp.145-173.

Abstract: Geographically referenced data storage and retrieval system (GRDSR), has been developed in Statistics Canada. As a geocoding system, its objective is to provide facts by small areas in Canada. GRDSR is based on the concept of block face centroids in UTM to which data are linked through postal addresses. The complete 1972 Canada census file has been geocoded to facilitate Ad Hoc tabulations of 1971 census data at statistics Canada upon user's request. All system components are being made available to Federal, Provincial, Regional and Municipal agencies and educational institutions in Canada to allow them the creation of their own geocoding system or to use the entire system on their own data files.

72.081

Popek, G.; Kingston, Peter; **Spatial data file structure considerations,** (at: Geographical data handling/Environmental information systems. Symposium ed. Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.866-889.

Abstract: Reviews different forms of file structures for spatial data storage in terms of user needs, costs of software and hardware, complexity and flexibility of systems, response time, and storage needs.

Location: 07.

72.082

Rhode Island Statewide Planning Program, Providence. **Inventory of state-owned land methodology. Final technical paper,** COM-72-11411, RISPP-TP-72-22,.

Abstract: The paper describes a two phase data-gathering process (research at state agency level and field research at city and town halls) necessary to establish the inventory listing. Methodology of the field data-gathering exercise is shown through illustration of all forms and maps actually employed. The third phase of inventory consists of continuous up-dating by use of transaction minutes of the State Properties Committee. An appendix of all laws dealing with the establishment and conduct of the State Properties Committee is included.

72.083

Robinson, S.C.; **Data standardization in geology,** (in: Geoscience information society proceedings, Vol.2,) 1972, Sept. pp.75-88.

72.084

Runge, Carlisle P.; Alston, Farnum; Kusler, John A.; Wisconsin University-Madison. Institute for Environmental Studies. **Faculty land use problem definition seminar. Symposium: A survey of Programs for Statewide Land Resource Inventories held at Madison, WI. on Mar. 22-23, 1972,** PB-273 453/1ST, 8D, (series: IES-Working papers), 1972, Dec..

Abstract: The seminar surveyed operational statewide geo-information systems in use in the United States and Canada. This special session was problem oriented and was designed to aid the state of Wisconsin in developing a proposal for a Wisconsin land resource inventory system. Expert speakers involved with current United States and Canadian geo-information system efforts were asked to make recommendations, based on their own experiences. These proceedings include individual presentations and accompanying questions and answers.

72.085

Simpson, Robert B.; Vuill, Robert S.; Lindgren, David T.; Geological Survey. Geographic Applications Program, Washington, D.C.. **Urban-field land use from RB-57 photography: the Boston and New Haven areas**, PB-225 116/3, USGS-DO-73-015, 1972, June.

Abstract: Comparison of information from aerial photography with concurrently derived U.S. Census information for the New Haven area is a follow-on to a prototype effort in the Boston area. Using Computer techniques developed in the earlier study, a land use map was created supplemented by tabular printouts of statistical data per land use category. The combined experience suggests that interpretation of photography directly into machine readable form would be desirable and comparison of repetitive coverage would permit meaningful change detection of urban land use.

72.086

Sinton, David F.; La Garde, V.; Kingston, Peter; Peucker, Thomas K.; Popek, G.; Tomlinson, Roger F., ed.; **Spatial data analysis techniques**, (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.785-865.

Abstract: Discusses some problems associated with generalization and classification of special data, various procedures for overlaying difficult data sets which have been recorded for a study area, and some methods of calculating basic spatial statistics.

Location: 07.

72.087

Sinton, David F.; LaGarde, Victor E.; Rens, F.; Tomlinson, Roger F., ed.; Harvard University. Department of Landscape Architecture, Cambridge, MA.. **Spatial data manipulation techniques**, (at: Geographical data handling/Environmental information systems. Symposium ed., Vol. 2. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.758-784.

Abstract: Concerns the spatial data transformation and manipulation routines which change the initial form of the stored data to a form suited to analysis in terms of three types of data manipulations (map projection changes, changes between line and vertex information and grid information, changes between line and vertex information for areas and print information for areas).

Location: 07.

72.088

Skoifield, Thomas G.; City of Portland, Model Cities Program, Information and Evaluation. **Geographically-based planning and evaluation system**, (at: Urban and regional information systems: Information systems and political systems. Ninth Annual conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association and Stockton State College) 1972 pp.104-111.

Abstract: Outlines the system development of an urban information system in Portland and details several areas of system development with respect to the main considerations in each area, and costs involved.

Location: 20.

72.089

State of New York. Office of Planning Services. **LUNR classification manual**, (series: Land Use and Natural Resource Inventory of New York State), (State of New York, Office of Planning Services) 1972, June.

Abstract: Presents the map-overlap symbols used for grid and point data in the Lunr System.

72.090

State of Wisconsin. Department of Administration. **Phase 1 report. Feasibility and pre-design study. A statewide geographic-based land use information system,.**

Abstract: Deals with land resources information, one of the four grant programme areas in the land use planning field. Records initial conclusions on the feasibility of providing a statewide land use information systems based on data stored for discrete geographic areas. Also included are tentative recommendations for developing such a system.

72.091

Steiner, Deiter; Brooner, William G.; Estes, J.; Fu, K.; Guy, M.; Landgrebe, D.; Orhaug, T.; Rosenfeld, Azriel; Tomlinson, Roger F., ed.; **Automatic processing and classification of remote sensing data,** (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 1. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.354-485.

Abstract: Discusses principles of image processing and pattern recognition as methods of processing remote sensing data. Also covers various kinds of implementations of these approaches.

Location: 07.

72.092

Steiner, Deiter; Stanhope, Terry; Cook, B.G.; Dueker, Kenneth J.; Horton, Frank E.; Rodgers, K.; Wellar, Barry S., ed.; Tomlinson, Roger F., ed.; **Data base development,** (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 1. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.34-117.

Abstract: Covers principles of geographic data base development, data needs, data acquisition, data standardization and data referencing.

Location: 07.

72.093

Steiner, Deiter; Hasell, P.; de Hoop, D.; Kesik, A.B.; Nossin, J.; Pease, R.; Simonett, D.S.; Winiger, M.; Tomlinson, Roger F., ed.; **Data collection by remote sensing,** (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 1. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.118-353.

Abstract: Discusses basic considerations in data collection by remote sensing, and gives details pertaining to difficult means of remote sensing.

Location: 07.

72.094

Steiner, Deiter; Anuta, P.E.; Collins, S.; Krathy, V.; Tomlinson, Roger F., ed.; University of Waterloo. Department of Geography, Waterloo, Ont.. **Geometric image transformations,** (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 1. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1972 pp.486-540.

Abstract: Covers image gridding and registration and 2-D and 3-D image mapping

Location: 07.

72.095

Steiner, Deiter; Dueker, Kenneth J.; Gregory, A.; Horton, Frank E.; Johnson, C.; Langley, P.G.; Lent, J.; Pisharoty, P.; Thorley, G.; Wellar, Barry S., ed.; Tomlinson, Roger F., ed.; **Remote sensing input to information systems,** (at: Geographical data handling/Environmental information systems. Symposium ed., Volume 1. UNESCO/IGU Second Symposium on Geographical Information Systems) (International Geographical Union. Commission on Geographical Data Sensing and

Processing) 1972 pp.541-631.

Abstract: Concerns applications of remote sensing in urban, agricultural, and wildland resource information systems

Location: 07.

72.096

Stephenson, M.; Younger, K.; **Problems of introducting a point referenced data system in an urban authority,** (at: Proceedings of the Second Urban Data Management Symposium) (Planning and Transport Research and Computation Co. Ltd.) 1972.

72.097

Symons, D.C.; **Parcel geocoding system for urban and regional information,** (at: 1972 URISA proceedings. Volume 2) (Urban and Regional Information Systems Association) 1972 pp.348-353.

Location: 01.

72.098

Tampa Bay Regional Planning Council. St. Petersburg, Florida; **Statewide regional information systems network,** PB-212-553, TBR-72-10-RIS-1, (United States. Department of Housing and Urban Development).

Abstract: Describes the design and development of a state-wide network of regional information systems. Discusses data sharing requirements.

Location: 20.

72.099

Taylor, D.R.F.; Carleton University. Department of Geography, Ottawa, Ont.. **Bibliography on computer mapping,** (series: Council of Planning Librarians exchange bibliography), (Council of Planning Librarians) 1972, Feb..

Abstract: Lists references on automated mapping in alphabetical order by author.

Location: 05.

72.100

Tomlinson, Roger F., ed.; Huff, A.; **Creation of geocoding files, area retrieval and mapping in urban data management,** (at: PTRC Datum CIUT Symposium Proceedings) (Planning and Transport Research Computation Company, Limited) 1972, Apr..

72.101

Tomlinson, Roger F., ed.; **Geographical data handling/Environmental information systems. Two volumes. UNESCO/IGU Second Symposium on Geographical Information Systems, Ottawa, ONT., Aug., 1972,** PB-234 308-9, (International Geographical Union, Commission on Geographical Data Sensing and Processing) 1972.

Abstract: Represents the results of the efforts of the Commission working groups, which were created to describe the current state-of-the-art of geographical information systems, to set guidelines for future systems and identify areas of needed research.

Location: 07, 17.

72.102

Tooker, John S.; California State Office of Planning and Research, Sacramento, CA.. **Directory of data sources: state agencies. Final report,** PB-220 579/7, OPR-72-03,.

Abstract: The report contains a directory of state agencies generating land related data in California. Data elements are grouped by environment, improvement, evaluation, tenure, activity, and intensity of activity. In addition, previous classes are divided into 38 data subgroups. This directory is limited to 53 state agencies generating their own data.

72.103
United States. Bureau of the Census. **Census use study: GRIDS, a computer mapping system,** (United States. Department of Commerce) 1972.

72.104
United States. Bureau of the Census. **Geographic base file system – uses, maintenance, problem solving,** (series: Computerized geographic coding series), (United States. Department of Commerce) 1972, May.
Abstract: A collection of papers concerning geocoding using DIME files emphasizing issues in file maintenance and updating.
Location: 07.

72.105
United States. Bureau of the Census. **Geographic identification code scheme,** PHC(R)1-PHC(R)4, (series: U.S. Bureau of the Census reports), (United States. Department of Commerce) 1972.

72.106
United States. Department of Transportation. Office of Systems Analysis and Information. **National Geocoding Conference proceedings,** (United States. Department of Transportation. Office of Systems Analysis and Information) 1972.
Abstract: Contains a summary of a 1971 Conference held to provide advice and guidance to the U.S. Dept. of Transportation in its effort to achieve improved and continuing coordination among the several national geocoding systems. Appendices contains selected papers as well as additional statements by Conference participants.

72.107
United States. Department of Transportation. Office of Systems Analysis and Information. **National geocoding converter file 1. Volumes 1-3,** (series: National geocoding system),.
Abstract: This document is the first in a planned series of documentation describing the geographic data base system designed to support the overall data programme of the office of systems analysis and information. The documentation for the first file of this system, national geocoding converter file 1, is contained in three volumes. Volume 1, the overview includes (1) an introduction to the data-base system, (2) a description of file-1 evolution and structure, and (3) two appendices illustrating specific aspects of the file.

72.108
United States. Department of Transportation. **Survey of national geocoding systems,** (United States. Department of Transportation) 1972, Feb..

72.109
United States. Department of the Interior. Geological Survey. Topographic Division. **Research and development in topographic mapping. Annual report,** PB-210 963, USGS-TD-72-003, (U.S. Geological Survey) 1972, Apr..
Abstract: The annual report, covering the 12-month period ending in April 1972, summarizes the research and development activities of the U. S. Geological Survey, Topographic Division in the Office of Research and Technical Standards and in the Region offices at Arlington, Va., Rolla, Mo., Denver, Colo., and Menlo Park, Calif. The R and D projects mentioned concern the fields of cartography, field surveys, photogrammetry, orthophotomapping, and space technology.

72.110

University of Illinois at Urbana - Champaign Center for Advanced Computation, Urbana, IL.. **IRIS - Illinois Resource Information System: Feasibility study. Final report: Summary and recommendations,** (University of Illinois at Urbana Champaign Center for Advanced Computation) 1972, Apr. 30.

Abstract: Summarizes the findings and recommendations of a study concerning the need for, and feasibility of, developing an IRIS. It briefly describes how user needs are determined, defines a geographic information systems, points out the problems and requirements involved in establishing an IRIS, describes other GIS currently in use and the usefulness and cost of an IRIS. Appendix B - Tabular summaries of the State of the Art survey: Contains two tables describing the GIS surveyed and summarizations of the capabilities of each system, and system component surveyed. Following the tables are one page summaries of the organizational efforts.

Location: 01,07.

72.111

Walden, A.R.; **Quantitative comparison of automatic contouring algorithms,** (series: Kansas Geological Survey K.O.X. technical reports), (University of Kansas) 1972.

72.112

Wellar, Barry S., ed.; Graff, Thomas O.; University of Kansas. Department of Geography. **Bibliography on urban and regional information systems: Focus on geographical perspectives,** (series: Council of Planning Librarian exchange bibliography), (Council of Planning Librarians) 1972, Sept..

Abstract: Provides a brief introduction concerning GIS issues. Lists bibliographic references under major subject headings by author.

Location: 07.

72.113

Wellar, Barry S., ed.; University of Kansas. **Perspectives on geographic aspects of information systems. Annual Meeting of the Association of American Geographers, special session - Geographic Research in an Information Systems Context. Kansas City, MO. Apr. 24, 1972,** (University of Kansas. Institute for Social and Environmental Studies) 1972, Dec..

Abstract: A collection of papers which concerns aspects of GIS such as geocoding, system development, file structures and file maintenance.

Location: 07.

72.114

Werner, Pamela A.; **Survey of national geocoding systems,** (United States. Department of Transportation. Office of the Assistant Secretary for Policy and International Affairs) 1972.

Abstract: Describes the major, national geo-coding systems in use in the U. S. No attempt has been made to analyze, compare or judge any of the geo-coding systems surveyed. Organized in three major sections: Geo-political coding systems, a section covering those geo-codes assigned to units unrelated to the settlement patterns of man-the-grid and coordinate based systems. Only a few of the geo-coding systems surveyed fit neatly and exclusively into any one of these divisions. However, this breakdown is the most meaningful and coherent of the many possible geo-coding classification schemes.

72.115

Williams, G. Daniel; Dickie, G.J.; Steiner, J.; **Computer storage and retrieval of geologic data on coal deposits,** (at: Proceedings of the First Geology Conference on Western Canadian Coal) (series: Research Council of Alberta information series), 1972 pp.73-84.

72.116

Williams, G. Daniel; Sharp, W. Ronald; **Computer mapping in agrometeorology,** (series: Technical bulletin), (Canada, Department of Agriculture, Agrometeorlogy Section) 1972, Jan..

Abstract: Describes developments in automated mapping of agrometeorology data in the Department of Agriculture Presents various methods with examples of data display.

Location: 10.

72.117

Willis, Jeffrey; **Design issues for urban and regional information systems,** no.71 (series: Centre for Environmental Studies working papers),.

Abstract: A model of planning process is developed based on a continuous process of monitoring, policy design, testing and implementation. The links between each stage and the data band are explained to provide design criteria. Design principles such as register systems and geocoding are described and three basic models, the Swedish, United States and hybrid compromises show how these principles operate in practise. Finally, six British information systems are reviewed in the context of the principles established.

Location: 07.

72.118

Profile: East Sussex. Project title: Integrated data system for the Planning Department, (in: BURISA newsletter, no.2) 1972, Dec. pp.3-5.

Abstract: Describes an urban information system for planning applications, its file structures, and geocoding.

Location: 07.

72.119

United States. Department of Commerce. Bureau of the Census. **Geographic base file system -- uses, maintenance, problem solving,** (series: Computerized geographic coding series), (United States. Department of Commerce) 1972, May.

Abstract: A collection of papers concerning geocoding using DIME files emphasizing issues in file maintenance and updating.

Location: 07.

1973
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73.001

Aangeenbrug, Robert T.; **Theoretical and practical constraints of a geographic base file,** (at: Land parcel identifiers for information systems. Conference or Land Identifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.APP.I, 157-176.

Abstract: Before a geographic base file can be established, a set of large-scale base maps must be tied to a state plane coordinate system or a metropolitan-area grid identifier on each map. It is also imperative that the geographic information system be linked to other file systems. This paper outlines the necessary capabilities, uses, and constraints of a geographic base file.

Location: 07.

73.002

Ahner, Raymond P.; **Parcel centroids versatility in the Urban Development Information System (UDIS),** (at: Urban and regional information systems: Information research for an urban society. Volume 2. Tenth Annual Conference of the Urban and Regional Information Systems Association) (URISA) 1973 pp.174-183.

Abstract: The Urban Development Information System (UDIS) is a man-machine system designed to monitor and forecast growth and to translate this growth into requirements for public facilities. One of the initial goals of Udis has been to keep the data base relatively small, yet to provide adequate information to clarify the land-use-decision making process. The value and flexibility of a small data base has been enhanced by including the X and Y coordinates of the parcel centroid in our basic computer file, the parcel file

73.003

Alberta. Provincial Assessor's Office. **Analysis of the proposed computerized programme for assessment and taxation,** (Alberta. Municipal Affairs. Assessment Branch) 1973.

Location: 01.

73.004

Alexander, Robert H.; Wray, James R.; Lewis, John E.; United States. Department of the Interior. Geological Survey. Geographic Applications Program. Washington, D.C.. **Central Atlantic Regional Ecological Test Site (CARETS): A prototype regional environmental information system,** E73-10347, E74-10048, 49, E74-10109,-10712, (series: Monthly progress reports),.

Abstract: The author has identified the following significant results. Accomplishments have included: (1) completion of the research design for the USGS/CARETS demonstration project, (2) preparation of photo-mosaics and land use maps at a scale of 1:100,000 for entire area, (3) demonstration of the feasibility of extracting several categories of land use information from ERTS-1 MSS data for a portion of the CARETS region, (4) demonstration of the feasibility of detecting some significant land use changes on ERTS-1 imagery, (5) demonstration of the feasibility of attaching environmental impact significance to the remote sensor-derived land use data, (6) delivery of land use information derived from high altitude aircraft data to the Maryland state planning agency for use in its statewide land use inventory, (7) demonstration of high interest by user groups in the test region in products and services provided by investigation, and (8) determination of the viability of setting up a computerized geographic information system as part of the CARETS investigation, to facilitate handling of sensor-derived land use data in a variety of formats to suit user requirements. A series of monthly progress reports which follows up on the above.

73.005

Alldridge, Everett O.; **Benefits accruing from an improved land records system,** (at: Land parcel identifiers for information systems. Conference on Land Identifiers Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.APPI., 99-110.

Abstract: Proposes that a combination of the various land data files into a master file is imperative until a solution is found that will be recognized as valid by most organizations involved in land record-keeping. Discusses areas needing improvement and savings accruing from a new system, the latter despute conversion costs.

Location: 07.

73.006

Allen, Neil, et al.; United States. Forestry Service, Intermountain Region. **Computer Mapping for Land Use Planning (COMLUP),** (United States. Department of Agriculture. Forestry Service) 1973, Sept..

Abstract: Provides details of mapping software programmes in COMLUP, a system designed primarily for land use planning and environmental studies.

Location: 07.

73.007

Almy, Richard R.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Assessor's parcel identification systems,** (at: Land parcel identifiers for information systems. Conference on Land Identifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.APP. 1, 277-298.

Abstract: Outlines The major parcel identification systems and evaluates them in the light of various criteria. Problems inherent in the systems and prospects for improved performance are also discussed.

Location: 07.

73.008

Alsberg, Peter A.; McTeer, William D.; Schuster, Stewart A.; **IRIS-NARIS: A geographic information system for planners,** (University of Illinois. Center for Advanced Computation) 1973 (circa).

73.009

Ayers, Eunice; Wunderlich, Gene; **Recorder and land records,** (at: Land parcel identifiers for information systems. Conference on Land Identifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.APP. 1.

Abstract: Details the present systems of recording and retrieval and the impact that significant changes will have on these systems.

Location: 07.

73.010

Baker, Leonard S.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Parcel identifier needs for engineering-related activity, Land parcel identifiers for information systems,** (American Bar Foundation) 1973 pp.App.2, 33-36.

Abstract: Discusses need for maps containing land related data, accuracy requirements, and how local governments should proceed when dealing with mapping companies

Location: 07.

73.011

Barraclough, Robert E.; **National geocoding system,** (at: Urban and regional information systems: Information research for an urban society. Volume 2. Tenth Annual Conference of the Urban and ,Regional Systems Association) (Urban and Regional Information Systems Association) 1973 pp.304-312.

Abstract: A number of recommendations are made for the establishment of the national geocoding system. These include: expansion of the existing dime geographic base files to provide for nationwide coverage, provision for an institutional frame-work for development of the system, provision for its update and maintenance, and provision for a research and development program which would yield standard software packages that would facilitate problem solving and decision making in a wide variety of specialist fields. Costs and benefits of the system are also discussed.

73.012

Basye, Paul E.; **Official legal significance of the parcel identifier,** (at: Land parcel identifiers for information systems. Appendix 1. Conference on Land Identifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.13-22.

Abstract: Examines the history of the present system of parcel identifiers, the needs of the various users, the relevant legislation, and the pertinent court decisions, and concludes that such a system would be both legally feasible and operationally desirable.

73.013

Basye, Paul E.; **Uniform land parcel identifier: Its potential for all our land records,** (in: American university law review, Vol.22, no.2) (American University) 1973, Winter pp.251-273.

Abstract: The adoption of a uniform system of parcel identification will depend upon the legal feasibility of assigning identifiers and compelling their use in all legal documents to refer to a particular parcel or portion of contaguous land owned by a given owner in one place. Examines the history of the present systems, the needs of the various users, the relevant legislation, and the pertinent court decisions, and concludes that such a system would be both legally feasible and operationally desirable.

Location: 01.

73.014

Bathke, William L.; Carter, R.S.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Geocoding and the urban environment: New approaches, Land parcel identifiers for information systems,** (American Bar Foundation) 1973 pp.APP.I, 191-202.

Abstract: Geocoding techniques currently in use have certain limitations as they pertain to the need for data integration. This paper describes a means of extending current capabilities by providing more effective linking techniques through use of a formatted file data management system in combination with a map modeling system.

Location: 07.

73.015

Bathke, William L.; **Geographic data base technology: An integrative approach,** (at: 1972 URISA proceedings, Vol. 2) (Urban and Regional Information Systems Association) 1973 pp.407-413.

Abstract: A research and demonstration program, funded by USAC, has recently been initiated in Des Moines, Iowa. This program focuses on the development of a sophisticated geographical information, planning and analysis system. Utilizing a master base map and grid system, map model system, and the formatted file system, the city of Des Moines hopes to demonstrate that data can be easily and effectively integrated with specifically designed geographic structure files.

73.016

Beaudet, Paul R.; Chan, F. Kenneth; Goldshlak, Leon; Computer Sciences Corporation. System Sciences Division, Silver Spring, MD.. **Organizational structures for constant resolution earth data bases. Final report,** Ad-773 964/2, CSC-6002-1,.

Abstract: Alternative organizational Earth data base structures to accommodate remotely sensed meteorological, oceanographic, and environmental measurements made from spaceborne instruments were investigated. Operating capabilities include constant, but selectable, geometric resolution, updating in place, direct access to local geographic areas, and retrieval of areas by serial bit strings. Two organizational structures were identified as data base candidates.

73.017

Behrens, John O.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Census of Governments and property values, parcels, and taxes in today's local finance, Land parcel identifiers for information systems,** (American Bar Foundation) 1973 pp.App. I, 325-352.

Abstract: The procedures and purposes of the property values survey of the census of governments are explained and related to the theory of property taxes and equitable tax assessment. Comes clear that a uniform indexing system for realty sales records, land-use records, and the other data contained in governmental files would facilitate intra-jurisdictional research on the problems of designing an equitable property tax program.

Location: 07.

73.018

Behrens, John O.; **Census responsibilities involving parcel identification and land use,** (National Assoc. of Recorders and Clerks) 1973, July 23.

Abstract: Reviews census of governments periodic surveys. Also considers the need for uniform parcel identification and parcel description systems.

73.019

Bennett, Howard C.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Parcel index maps: Some considerations, Land parcel identifiers for information systems,** (American Bar Foundation) 1973 pp.APP1, 111-128.

Abstract: Discusses the need for an identifying code that must be simple, adaptable, expandable, suitable for use in data processing equipment, and capable of indicating geographic location. Outlines the characteristics of the new block and lot system begun in Boston in 1961 and the reasons for its adoption over other systems.

Location: 07.

73.020

Blachut, T.J., Ed.; **Cadastre as a basis of an integrated general land survey of the country,** (National Research Council of Canada) 1973, May.

Abstract: A discussion of a cadastre system, limited mainly to proposed surveying and mapping requirements for maintaining a bank of physical data about land.

73.021

Boyle, A. Raymond; **Computer aided map compilation: CACM programme. - General user description,** (University of Saskatchewan. Electrical Engineering Department) 1973, Oct..

73.022

Britain. Department of the Environment. **Manual on point referencing properties and parcels of land: Techniques for planning,** (Her Majesty's Stationery Office) 1973.

Abstract: Discusses in detail ten practical steps of introducing point referencing to a data system, shows how a number of local authorities have approached the task, and brings together a wide range of examples of how point referencing can help local authorities in carrying out their responsibilities.

Location: 07.

73.023

Broome, Frederick R.; **Micrographics: a new approach to cartography at the Census Bureau,** (at: Proceedings of the Fall Convention, ACSM) 1973 pp.265-283.

73.024

Brophy, D.M.; **Automated methodology for linear generalization in thematic cartography,** (at: Proceedings of the American Congress on Surveying and Mapping 33rd Annual Meeting) 1973 pp.300-314.

73.025

Burk, C.F., Jr.; Canadian Centre for Geoscience Data, Ottawa. **Computer-based storage and retrieval of geoscience information: Bibliography 1970-72,** FD-082 766, Paper 73-14,.

Abstract: The publication of papers describing activity in computer-based storage and retrieval and geoscience information has continued at a vigorous pace since release of the last bibliography, which covered the period 1946-69 (ED 076 203). A total of 211 references are identified, nearly all of which were published during the three-year period 1970-72 inclusive. The objectives of the present compilation remain identical to those of the 1946-69 edition: worldwide coverage, identification of papers describing the use of computers and/or computer-readable records for storage and retrieval of information in the solid-earth sciences, and identification of works of direct assistance to this activity. The field of remote sensing, which has emerged as a major user of computer-based information systems during the past few years, has been largely excluded from this compilation, as have papers in the fields of hydrology and oceanography. Six indexes precede the bibliography: Geoscience discipline and/or topic, Information aspect, System name and acronym. Nation, Organization (origin of work), and Author.

73.026

Burke, D. Barlow; **Governmental intervention in the conveyancing process,** (in: American university law review, Vol.22, no.2) 1973, Winter pp.239-249.

Abstract: Discusses several methods of measuring the growing crisis in the conveyancing system. Also suggests 6 steps that must necessarily precede computerization of the title system.

73.027

Calkins, Hugh W.; Robertson, John L.; State of Washington. Office of Community Development. **Proposed Washington State Land Information Service,** (at: Confer-In '73).

Abstract: Discusses problems related to user needs and acceptance of automation with respect to information systems for planning applications. Emphasizes the need for monitoring and evaluating the planning process.

Location: 07.

73.028

Calkins, James A.; Kays, O.; Keefer, E.K.; **CRIB - the mineral resources data bank of the U.S. Geological Survey,** (in: Geological Survey circular, no.681) (U.S. Department of the Interior) 1973.

73.029

Canada. Land Inventory Programme. Lands Directorate. Alberta. Lands and Forests. **Phase 1:Musreau Planning District,** (series: Foothills Resource Allocation Study), (Alberta. Department of Environment and Canada. Department of Environment) 1973, Aug..

Abstract: Provides a general description of the resource allocation study which uses a resource information system for data processing and automated land use mapping. Details work in the Musreau Planning District, with land use maps of the area.

Location: 07.

73.030

Carlberg, Edward F.; **Polygon overlay system,** (at: 1972 URISA proceedings, Volume 1) (Urban and Regional Information Systems Association) 1973 pp.211-218.

Abstract: Briefly describes a prototype of a natural resources information system. A user survey established requirements and existing methods. Purposes of five major programming functions are described, together with the basic concept of polygon digitizing, computer record structure, and data weeding as it effects fidelity and costs. Some mention is made of cellular systems and the general lack of quantitative comparisons between these and polygon type systems.

Location: 20.

73.031

Carlin, Cyril B.; **Property identifiers for the Maritime provinces of Canada,** (at: Land parcel identifiers for information systems. Conference on Land Indentifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.APP. 1, 229-236.

Abstract: In the 1960's, the Maritime provinces of Canada initiated a program of control surveying, mapping, and land registration. The system of property identification devised is based on a sequential number set and allows geocode identifiers and other indexes to be generated on secondary bases. Delineates the research and deliberation that went into the design of this identifier.

Location: 07.

73.032

Champaign County Regional Planning Commission. **Data monitoring system. Land use/housing survey. Technical guide. Annual report. June 72-June 73,** PB-225 979/4, IL-CCRPC-73-02, (Champaign County Regional Planning Commission) 1973, June.

Abstract: The Champaign County Regional Planning Commission has developed a data monitoring system which will eventually provide land and housing information for every parcel of land in Champaign County. This report provides documentation for the initial land use and housing survey that established a data base for the Champaign-Urbana urban area. Only those types of information were collected that could be obtained from existing maps and visual field surveys. Seventeen specific items of information were recorded for each parcel, and, in addition, at least twenty-two items were recorded for each building on a given parcel. The data set for the Champaign-Urbana urban area consists of 56,000 individual card records. Computer processing was used to test the data for errors and to provide summary tabulations for each block and census tract.

73.033

Champaign County Regional Planning Commission. **Data monitoring system. Land use/housing survey. Update procedures. Report for June 1972-June 1973,** PB-226 038/8, IL-CCRPC-73-03, (Champaign County Regional Planning Commission) 1973, June.

Abstract: The Champaign - Urbana Land Use/Housing Data File will undergo an annual update. Twenty percent of the data will be completely surveyed each year. Some types of information, including zoning changes and new parcel acreages, will be updated on an annual basis throughout the Urban area. Field data collection procedures for the update will be similar to those of the original survey, except that needed corrections or changes will not necessarily require recording of entire data records. Corrections and updates will be entered on the data tape, using CUDATA4, a new FORTRAN program. Land use maps will also be updated where needed. A description and complete listing of CUDATA4, plus descriptions of updated versions of the CUDATA1 and CUDATA3 programs are included.

73.034

Champaign County Regional Planning Commission. **Data monitoring system. Small area profiles for the Champaign-Urbana urban area. Final report**, PB-225 980/2, IL-CCRPC-73-01, (Champaign County Regional Planning Commission) 1973, Apr..

Abstract: The Small Area Profiles for the Champaign-Urbana Urban Area consist of: A guide for using the Champaign County Regional Planning Commission's computerized land use/housing data system, a series of small area profiles within the metropolitan area, and a map depicting those small areas. The profiles are based on 1972 information collected by the staff of the Regional Planning Commission. The report is intended to be a reference document for local government officials and private individuals as they make decisions affecting the environment of the region. Annual updates of the document will reflect the maintenance of the current information base and expansions of the surveyed area.

73.035

City of Des Moines, IA. USAC Project. **City of Des Moines USAC Geoplanning Project: Systems implementation /demonstration Task 4 report**, PB-226 618/7, USAC - DM13-0004, (City of Des Moines, IA.) 1973, July.

Abstract: The report is a part of a USAC series produced by the city of Des Moines covering activities from systems analysis through implementation and evaluation of an urban information system. The Task 4 report demonstrates the successful operation of the total geoplanning prototype system which encompasses the products produced in tasks 1, 2 and 3. The report includes printed maps and computer output. The entire system as used for the demonstration is summarized using general concepts as well as more detailed systems flowcharts. The report reviews applications for geoplanning and discusses the existing data base. The data base used for the demonstration is discussed in detail. Implementation of the system is summarized through a series of coded forms, cards and computer listings.

73.036

City of Des Moines, IA. USAC Project. **City of Des Moines USAC Geoplanning Project: Orientation and training. Task 6 report**, PB-226 583/3, USAC-DM13-0006, (City of Des Moines, IA.) 1973, Aug..

Abstract: The report is a part of a USAC series produced by the city of Des Moines covering activities from systems analysis through implementation and evaluation of an urban information system. The Orientation and Training Task 6 Report is a document intended primarily for computer personnel. Although it contains an orientation section for local officials, it is not intended as a general document for management personnel. The document presents procedures necessary for data preparation subsequent to geographic file building. The procedures for building geographic files and procedures for creating data linkages are presented in detail. The document covers a broad range of activities from application inception to utilization of the integrated geoplanning technology. Included are computer listings which show procedures necessary to use the Geographic Subsystem and the formatted file system.

73.037

City of Des Moines, IA. USAC Project. **City of Des Moines USAC. Geoplanning Project. Final report**, PB-226 579/1, USAC-DM13-0008, (City of Des Moines, IA.) 1973, Sept..

Abstract: The report is a part of a USAC series produced by the city of Des Moines covering project activities from systems analysis through implementation and evaluation of an urban information system. The Final Report presents a program overview, a summary of accomplishments and products produced in the seven (7) tasks. Recommendations are made pertaining to basic USAC/Des Moines interests including technology transfer, data management and program expansion. Three major components of the research and development effort are described. The major thrust of the project is summarized, bringing together these three system components. Applications of the technology developed are presented along with potential application solutions. A summary of mapping and a discussion of activities is included.

73.038

City of Des Moines, IA. USAC Project. **Geoplanning Research Program systems evaluation,** PB-233 729/3, USAC-DM13-0005, (City of Des Moines, IA.) 1973, Aug..

Abstract: The report is a part of a USAC series produced by the city of Des Moines covering activities from systems analysis through implementation and evaluation of an urban information system. The Systems Evaluation Task 5 Report is a document intended for potential users of the entire system in order to evaluate the report in light of their own system. A general level evaluation is made of the projects, goals, progress and results. It was prepared by an independent qualified evaluation team for the purpose of objective assessment of the complex R and D effort. Report contents are strictly those of the evaluation team; however, the project leadership and technical staff participated in a review of the draft report.

73.039

City of Des Moines, IA.. **Proposed geoplanning demonstration project, using geographic base file technology,** (City of Des Moines. Department of Finance) 1973.

Abstract: Describes research methods used for mapping, digitizing, editing and development of geographical file data structure in Des Moines, Iowa USAC project.

73.040

City of Des Moines, IA.. **Systems conceptualization - Task 2 report (FINAL),** PB-220 582/1, USAC-DM13-0002, (series: Des Moines Geoplanning Research Program, USAC), (City of Des Moines, IA.) 1973, Apr..

Abstract: The report is part of a USAC series produced by the city of Des Moines. It conceptualizes operational solutions to linking geographic data base files to municipal-county functional operational data, enhancing data finiteness, service integration, use of the NIPS-360-Formatted File System as a public domain data management system, and advancing the state-of-the-art of geocoding technology. The systems conceptualization is course level macro design configuration and includes jurisdictions and geographic areas, premises, system-level requirements, resources required, and examination of the inter-relationships of data acquisition, handling, and generation of geoplanning outputs.

Location: 07.

73.041

City of Edmonton. Planning Department. **Population and Land Use System update (97),** (City of Edmonton. Planning Department. Research and Long Range Planning Branch) 1973, Jan..

Location: 01.

73.042

City of Long Beach, CA. USAC Project. **Geographic indexing support system conceptualization,** PB-231 614/9, USAC-LBC3-0021, GIS-STR-002, (City of Long Beach, CA.) 1973, Oct. 12.

Abstract: The report is from a USAC series produced by the City of Long Beach, covering activities from systems analysis through implementation and evaluation of urban information systems. The Public Safety Subsystem is an integral part of an Integrated Municipal Information System (IMIS) that is being developed for USAC under contract with the Department of Housing and Urban Development. The report documents the conceptualized approach that will be used to design, develop, and implement a geographic indexing support system

(GISS) which will provide processing support to all subsystems of the IMIS.

73.043

City of Long Beach, CA., **IMIS PSIS, geographic indexing support system requirments survey**, PB-221 962/4, GIS-STR-001, USAC-LBC3-0020, (City of Long Beach, CA.) 1973, May 21.

Abstract: The report is from a USAC series produced by the city of Long Beach, California, covering activities from systems analysis through implementation and evaluation of urban information systems. The report documents findings of a survey conducted to identify geocoding requirements for the city. The goal of the geographic indexing support system (GISS) is to provide geographic processing support to municipal information systems. GISS will be developed as a generalized system to provide geographic locational capabilities for a wide variety of applications and users.

73.044

City of Wichita Falls, TX. USAC Project. **Geographic Base Index System application completion report**, PB-227 709/3, USAC-WFT2-5002, (City of Wichita Falls, TX.) 1973, Nov. 1.

Abstract: The report is from a USAC series produced by the city of Wichita Falls, Texas, covering activities from systems analysis through implementation of urban information systems. The purpose of this Application Completion Report is to document the GBIS Edit, GETABS, and Extend GBIS application groups. These application groups function as one system to satisfy the geographic information processing needs of the city and the IMIS. GBIS is the manifestation of a significant milestone in geographic data processing. It concurrently provides support in two major dimensions operational and analytic. It assists the service oriented departments and their automated applications (such as water billing, tax record keeping, etc.) With consistent and correct addressing and data access capabilites, and simultaneously provides the ability for the analytic and management oriented elements of the city to aggregate data for planning and management purposes (such as identification of high crime rate areas, changes in population density, land use).

73.045

Cooke, Donald F.; **Storage and retrieval of geographic data**, (at: URISA, SIG/GBF Technical Session, Atlantic City, N.J.) 1973.

73.046

Cook, Robert N.; **Modern computerized system of land records**, (in: County recorder, Vol.15, no.2) 1973, Jan. pp.6.

Abstract: Focuses on developments in Ohio as to improvements in land title record systems. Discusses numerous land-related record files that should use a uniform parcel index, as well as culdata model, Clipp and Mackinac Conferences, and a report by the Ontario Law Reform Commission on land registration.

73.047

Corbett, James P.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Use of the DIME system for identification of places and description of location, Land parcel identifiers for information systems - Problems, prospects and payoffs**, (American Bar Foundation) 1973 pp.App.1, 149-156.

Abstract: In recent years, the reduction of maps to computer codes has increased the ability of the consumer to file and retrieve data related to land records. The Dime method, devised by the U.S. Bureau of the Census, has a number of advantages, especially in regard to the linking of various files. Its major technical features are outlined here.

Location: 07.

73.048

Dangermond, Jack P.; **Classification and review of coordinate identification and computer mapping system,** (at: Urban and regional information systems: Information research for an urban society. Tenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1973 pp.184-198.

Abstract: Deals with a classification of spatial indentification techniques for automated geographic information and describes some of the advantages and disadvantages of alternative technical approaches. Considers historical methods for satisfying information problems and then discusses current methodologies being utilized. The grid, polygon, and single point techniques are each discussed in detail. In addition, various computer graphic and analysis programs are also examined in terms of their usability by the various spatial identification techniques. Appendix I outlines briefly the technical approach for a new mapping program (Automap I) which does everything that symap does and also fits on small computers. Appendix II describes a set of polygon overlap programs recently written by Esri. Appendix III is a detailed discussion of alternative methods for spatial identification within parcel information systems.

73.049

De Monte, Robert J.; California State Office of Planning and Research, Sacramento, CA.. **Directory of land related sources: State agencies,** PB-227970, OPR 74 01, (National Technical Information Service) 1973.

Location: 17.

73.050

Dial, O.E.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Parcel identifier needs for land use related activity, Land parcel identifiers for information systems,** (American Bar Foundation) 1973 pp.App 2, 19-32.

Abstract: Reviews several considerations to be taken into account in evaluation of identification systems for land use data. Includes matrix summarizing conclusions

Location: 07.

73.051

Douglas, David H.; Peucker, Thomas K.; **Algorithms for the reduction of the number of points required to represent a digitized line or its caricature,** (in: Canadian cartographer, Vol.10, no.2) 1973, Dec. pp.112-122.

Location: 06, 28, 36.

73.052

Douglas, David H.; Peucker, Thomas K.; **BNDRYNET, Interactive map in urban research. Final report after year one,** (University of British Columbia) 1973.

73.053

Dueker, Kenneth J.; Drake, Joseph S.; **Information systems for land resource planning,** (University of Iowa. Institute of Urban and Regional Research) 1973, Jan..

73.054

Dueker, Kenneth J.; Talcott, Richard L.; **Statewide land use analysis and information requirements,** (series: Working papers), (Universityof Iowa. Institute of Urban and Regional Research) 1973, Oct..

73.055

Ewald, William R., Jr.; **Graphics for regional policy making- preliminary study,** Ed-092 139,.

73.056

Fabbri, Andrea G.; **Geological data bank for statistical analysis,** 73-1 Pt.B, (series: Geological Survey Canada papers), (Geological Survey of Canada) 1973 pp.29-37.

73.057

Fleming, M.S.; Swanson, W.G.; LeBlanc, Aubrey L., ed.; Canadian Transportation Commission. Ontario. Ministry of Transportation and Communications. **CROPP: Conformal Representation of the Prairie Provinces, Computer cartography in Canada,** (B.V. Gutsell. York University. Department of Geography) 1973 pp.87-103.

Abstract: Considers CROPP, a file of coordinate points of the centroids of sections and quarter sections, developed to spatially relate land parcels especially for computer mapping. Describes data merging, and data manipulation capabilities for mapping and other applications.

Location: 15, 06, 28, 36.

73.058

Fornataro, J.A.; Lanham, R.N.; **Cost-effective applications of computer graphics,** (at: Urban and regional information systems: Information research for an urban society. Volume 2. Tenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1973 pp.48-55.

Abstract: Several current uses of plotters in handling and interpreting statistical and geographic data are discussed. Emphasis is on hardcopy graphics as working tools in operational (not research) situations. Approaches to building, editing, and using geographic data bases are presented, with reference to practical methods of combining statistical with geographical data for meaningful display. Purely statistical display techniques are also discussed. Existing systems and software that are generally available and described, as are criteria for deciding whether to make or buy.

73.059

Furuya, H.; LeBlanc, Aubrey L., ed.; Canadian Hydrographic Service, Ottawa, ONT.. Ontario. Ministry of Transportation and Communications. **Automating the marine chart production processes, Computer cartography in Canada,** (B.V. Gutsell. York University. Department of Geography) 1973 pp.23-36.

Abstract: Concerns the development of the automated marine charting mapping programme of the Canadian Hydrographic Service. Discusses digitization, data base development, and data display.

Location: 15,06,28,36.

73.060

Gladwin, T.W.; Hertfordshire County Planning Department, England.
Profile:Hertfordshire, (in: BURISA newsletter, no.7) 1973, Oct. pp.7-10.

Abstract: Provides a system description of the Hertfordshire County Planning Department information system. Discusses system development, geocoding and describes each of the subsystems in the information system.

Location: 07.

73.061

Gottlieb, Steven E.; Hanssen, Eric S.; **GBIS: Development of a geographic index system,** (at: Land parcel identifiers for information systems. Appendix 1 (Papers of the Conference on Land Identifiers - Problems, Prospects and Payoffs)) (American Bar Foundation) 1973.

73.062

Gracie, Gordon; **Issues relative to the nationwide adoption of the Universal Transverse Mercator Grid Reference System,** (Canada. Department of Energy, Mines and Resources. Director General Surveys and Mapping Division. Canadian Council on Urban Surveying and Mapping) 1973, Sept..
Location: 01.

73.063

Hannah, John W.; Thomas, Garland L.; Esparza, Fernando; Brevard County Planning Department, Titusville, FL.. **Planning Applications in East Central Florida. Progress report. 1st June - 31st July 73,** PB-222 614/0,.

73.064

Hansen, Hans; **Status of urban data systems in Germany,** (at: 1972 URISA proceedings, Volume 2) (Urban and Regional Information Systems Association) 1973 pp.471-478.

Abstract: Outlines Urban Information Systems being developed in Germany. System includes a person file, a land parcel file, and a financial file, all three of which are interlinked by the use of geographic coordinates. A typical local government level computer center is also outlined.

73.065

Hanssen. Eric S.; Gottlieb, Steven E.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **GBIS: Development of a geographic index, Land parcel identifiers for information systems,** (American Bar Foundation) 1973 pp.App. 1, 177-190.

Abstract: The use of geographic coding as an indexing tool to assist routine governmental operations has received little attention. It has, however, been studied in the Wichita Falls (Texas) integrated municipal information system (IMIS) project, resulting in a new use for the dual independent map encoding (DIME) system. This application of Dime is especially promising for identifying storing, and retrieving parcel-based data.

Location: 07.

73.066

Harding, Roger A.; United States. Department of natural Resources, Olympia, WA.. **GRIDS and DNR,** (at: Proceedings of the Symposium on Remote Sensing) (American Society of Photogrammetry) 1973.

Abstract: Concerns the Gridded Resource Inventory Data System which uses point data from various sources. Describes data storage and data retrieval and file maintenance.

73.067

Harris, L.J. Brig.; LeBlanc, Aubrey L., ed.; Canada. Department of Energy, Mines and Resources. Surveys and Mapping Branch. Ontario. Ministry of Transportation and Communications. **Approach to automatic cartography for topographic mapping in Canada, Computer cartography in Canada,** (B.V. Gutsell. York University Department of Geography) 1973 pp.10-15.
Location: 15,06,28,36.

73.068

Harris, L.J. Brig.; LeBlanc, Aubrey L., ed.; Canada. Department of Energy, Mines and Resources. Surveys and Mapping Branch. Ontario. Ministry of Transportation and Communications. **Automated cartography in federal mapping in Canada, Computer cartography in Canada,** (B.V. Gutsell. York University. Department of Geography) 1973 pp.16-22.

Abstract: Discusses developments in the automated mapping programme of the Canada Surveys and Mapping Branch. Describes the system, used to produce the maps, with emphasis on the hardware.

Location: 15,06,28,36.

73.069

Harvard University. Landscape Architecture Research Office. **Interaction between urbanization and land: quality and quantity in environmental planning and design,** PB-278 892/5ST,.

Abstract: This progress report is a description of the first two years of a three-year study to design and develop models that analyze the processes of urban development in a region, the social, fiscal and environmental evaluations of these changes, and the legal constraints upon them. These components can be organized to share a technical infrastructure consisting of a data base, a computer data-processing system, which includes a variety of spatial and other analysis programs, and a series of graphic and other output devices. These models are then organized to be linked into a variety of modes that can be combined in a wide range of ways depending on the information desired. Included is the organization of the research, an economic and demographic study of the region, land-use allocation models, evaluation models, a legal model, the organization of the computer processing, the data inventory, and the research proposed for the third year of the study.

73.070

Hill, E.R.; Battelle Pacific Northwest Laboratories. Richland, WA.. **Interactive graphics: Analytical tool for geoprocessing,** BNWL-SA-5517, CONF-750832-1, 1973.

Abstract: An innovative approach to geoprocessing is described, PTOLEMY, an interactive geoprocessing system, is implemented in FORTRAN and operates on a minicomputer. The system uses polygon overlap techniques for geographic retrieval and employs the concept of a separately maintained geographic base file. Interactive graphics provides another dimension for interacting with a data base. Queries are formulated using pictures as well as conventional means. This combination of techniques permits access to information based upon geographic data or upon characteristics of other technical data in the data base. With the ability to selectively pursue either type of file while maintaining information relationships, the analyst sees immediate results. An interactive system, such as PTOLEM, enables the analyst to make dynamic reformulations and refinements of queries to produce the required information as it is needed.

73.071

Hinshaw, Andrew J.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Use of computers in a property assessment system, Land parcel identifiers for information systems,** (at: Land Identifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.Appl, 299-324.

Abstract: To illustrate the contribution of a simple understandable property description system, seven such systems currently in use in Orange County, California, are outlined in detail.

Location: 07.

73.072

Hoeh, Roger S.; **Project report: A Land Oriented Information System for New Jersey. Fiscal year 1973,** (New Jersey. Department of Community Affairs) 1973, May 22.

Abstract: Summarizes major activities and results of a project to develop an information system to support land use planning in New Jersey. Includes a review of data included, format, and identifier systems used to coordinate and retrieve data. State plane coordinate system is one of the major identifiers used in LOIS (Land Oriented Information System).

73.073

Horwood, E.M.; **Geographic information systems,** (at: COMRIM '72 - Proceedings of the Second Annual Conference. COMRIM '72) (CFMM) 1973, Apr..
Location: 01.

73.074

Hughes, Alan; **Data base and information system research and development in Canada: Problems and roles,** (Canada. Ministry of State for Urban Affairs) 1973, July.
Abstract: Using the 1968 report entitled information for urban affairs in Canada, provides some specifics about what needs to be done and what the role of each level of government should be in this regard. Includes discussion of standardization, temporal and spatial compatibility, confidentiality of data elements and vertical and horizontal data linkages needed within and among various levels of government.

73.075

Ingels, Franklin M.; Boyd, Robert W.; Mississippi State University. **Study of application of remote sensing data to land use planning on the Mississippi Gulf Coast. Interim report Sept.** 72 - **Jan.** 73, E73-10072,.

73.076

Jancaitis, J.R.; Jankins, J.L.; **Mathematical techniques for automated cartography,** (U.S. ETL) 1973.

73.077

Jensen, John E.; **Computerization of land records by the title industry,** (in: American university law review, Vol.22, no.2) 1973, Winter pp.393-406.
Abstract: Reviews use of automated techniques used by title insurers and abstractors. Concludes that flexibility of current public record systems may be more important to the public than greater efficiency if standardized parcel identifiers and data banks were used.

73.078

Kiefer, Ralph W.; Robbins, Michael L.; University of Wisconsin, Madison, WI.. **Computer-based land use suitability maps. Paper 10015,** (in: Journal of the Surveying and Mapping Division, ASCE, Vol.99, no.SU1) 1973, Sept. pp.39-62.
Abstract: Presents an automated method for land capability analysis in urban areas (based on topography, soil, flood hazard and drainage data) for land use planning applications.
Location: 05,09,20,21,28.

73.079

Kessler, Allan R.; **ADMINS Census example: Address matching,** (Massachusetts Institute of Technology Center for International Studies) 1973, Dec..
Abstract: Address matching refers to a procedure for relating information about geographic location to attributes of persons or things, using street addresses as cross references. This paper describes the use of the admins system, coupled with dime-dual independent map encoding to identify all blocks and all street segments as an urban area.

73.080

Kessler, Allan R.; **ADMINS demonstration: Municipal planning information,** (Massachusetts Institute of Technology. Center for International Studies) 1973.
Abstract: Admins provides a set of computer tools for managing past and present inventories of planning information as well as information about future projections. Provides tools for use with both discrete geographic location information and information about persons and things. The system is described

here, along with a series of examples of uses of the system.

73.081

Kessler, Allan R.; **ADMINS example: Hierarchical classification schemes,** (Massachusetts Institute of Technology. Center for International Studies).

Abstract: Contains examples of several lists of descriptions for use in hierarchical classification systems. The encoding of these lists uses the position of a digit in a multidigit number to represent class, subclass, etc. Example lists are included for land use, standard industrial classification, continent and country location identifiers, federal information processing system state name descriptors and locations within Middlesex County, Massachusetts.

73.082

Krasnakevich, John R.; **Computer graphics applied to geographic base file editing and maintenance,** (at: 1972 URISA proceedings. Volume 2) (Urban and Regional Information Systems Association) 1973 pp.65-68.

Abstract: Summarizes several procedures useful in editing geographic base files. Computer edits are emphasized and several examples are presented to check (1) Digitizing accuracy, (2) Digitizing completeness, (3) Coding and keypunching accuracy, and (4) Map distortion. The techniques utilized are simple and virtually any installation working with GBF'S could implement the procedures.

73.083

LeBlanc, Aubrey L., ed.; Ontario. Ministry of Transportation and Communications. Canada. Department of the Environment. Lands Directorate. **Canada Geographic Information System, Computer cartography in Canada,** (B.V. Gutsell. York University. Department of Geography) 1973 pp.62-86.

Abstract: Describes the CGIS, a system for processing mapping data collected by the Canada Land Inventory. Discusses data encoding, error correction, data retrieval, computer commands and their functions.

Location: 15,06,28,36.

73.084

LeBlanc, Aubrey L., ed.; Ontario. Ministry of Transportation and Communications. **Computer cartography in Canada,** (B.V. Gutsell. York University. Department of Geography) 1973.

Abstract: A collection of papers which concerns automated mapping programmes in Canada, particularly in the Canadian government, for urban, marine, land use, and topographic map production.

Location: 15.

73.085

LeBlanc, Aubrey L., ed.; Ontario. Ministry of Transportation and Communications. **Semi-automated production system for engineering plans: Adaptability to cartography, Computer cartography in Canada,** (B.V. Gutsell. York University. Department of Geography) 1973 pp.37-48.

Abstract: Describes a semi-automated drafting system for engineering plan production and discusses factors relevant to the creation of new maps and to map revision, using this system.

Location: 15,06,28,36.

73.086

Leary, Fairfax, Jr.; Blake, David G.; **Twentieth century real estate business and eighteenth century recording,** (in: American university law review, Vol.22, no.2) 1973, Winter pp.275-331.

Abstract: Argues that the proliferation of disparate information storage facilities maintaining both title and land use data can no longer be tolerated. Based upon a survey of 14 Pennsylvania counties, suggests it is time that a unified computer-compatible system for the storage, retrieval, and dissemination of information concerning each parcel of land be adopted.

73.087

Lee, Douglass B., Jr.; University of California. Institute of Urban and Regional Development. **BART-2: Pre-BART studies of environment, land use, retail sales. Part 3. Volume 5. Pilot land use, information system: Walnut Creek. Final report,** PB-236 745/6SL,.

Abstract: The report attempts to demonstrate the particular qualities that computer operation can offer in building a land use information system. It presents the pilot system whose purpose is monitoring the land use and related activities around the Walnut Creek BART station. Chapters include map construction, data collection, retrieval and display, system development, and costs.

73.088

Lower Pioneer Valley Regional Planning Commission. **Regional information system: Feasibility report,** (Department of Housing and Urban Development) 1973.

73.089

Maggs, Peter B.; **Automation of the land title system,** (in: American university law review, Vol.22, no.2) 1973, Winter pp.369-391.

Abstract: Outlines major features of current U.S. land title system and examines automation techniques being used in other areas of law, business, and in foreign title systems. Then considers how such techniques might be applied to problems of maintaining, abstracting, and evaluating land title records.

73.090

Maggs, Peter B.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Evolutionary approach to compatible identifiers for computerized land records,** (at: Land parcel identifiers for information systems. Appendix 1. Papers of the Conference on Land Identifiers - Problems, Prospects and Payoffs) (American Bar Foundation) 1973 pp.83-98.

Abstract: Describes a method developed for defining a unique, easily calculated, standardized centre point for a parcel. A summary of the coordinated science laboratory's experience in this field is described.

Location: 07,01.

73.091

McLaughlin, John; **Monitoring the Maritime provinces Land Registration and Information Service (a philosophical overview),** (University of New Brunswick) 1973.

Abstract: Describes in the general terms a system needed to monitor the land registration and information service being developed in the Maritime Provinces of Canada. Basic argument is that each part of land information should be justified, in economic terms, before implemented.

73.092

McMurtry, George J.; Petersen, Gary W.; Borden, F.Y.; Weeden, H.A.; Applegate, D.N.; Pennsylvania State University. Office for Remote Sensing of Earth Resources, University Park. **Land use mapping. Interior report,** E73-11109, ORSER-SSEL-TR-14-73,.

73.093

Merrill, R.D.; Lockheed Palo Alta Research Laboratory, CA.. **Representation of contours and regions for efficient computer search,** (in: Communications of the Association for Computing Machinery, Inc., Vol.16, no.2) 1973, Feb. pp.69-82.

Abstract: Describes a computer-searchable representation for contour maps, regions, and lines. Discusses the file structures and computational capabilities.

Location: 09,05,20,25,28,37.

73.094

Mitchell, William H.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Parcel identifier needs for administration-related activity,** (at: Land parcel identifiers for information systems. Papers of the Conference on Land Identifiers - Problems, Prospects and Payoffs) (American Bar Foundation) 1973 pp.Appendix 2, 45-54.

Abstract: Discusses the current and potential local government administrative needs for a geocoded land parcel information system.

Location: 01,07.

73.095

Montagano, G.A.; **Report on current and future development in an automated cartographic system,**.

73.096

Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; Moyer, D. David, ed.; UNITED STATES. DEPARTMENT OF AGRICULTURE.. **County cadastres and compatible parcel identifiers: Needs and costs,** (at: Land parcel identifiers for information systems. Papers of the Conference on Land Identifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.Appendix 1, 33-74.

Abstract: Desirable characteristics of compatible parcel identifiers are suggested for use in a proposed electronic county Cadastre system. Several operating land-data systems in Europe and North America are described. Estimates of costs to local government of converting to compatible parcel identification systems are provided.

Location: 01,07.

73.097

Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Identification and analysis of probable consequences of a standard parcel identifier, Land parcel identifiers for information systems,** (at: Land Identifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.App. 2, 9-18.

Abstract: This workshop report focuses on two objectives, (1)Characteristics that a point and parcel identifier system should include and (2)identifies and analyzes the probable consequences of adopting a standard parcel indentifier.

Location: 07.

73.098

Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Land parcel identifiers for information systems,** 0-910058-58-X, (at: Land Identifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973.

Abstract: Describes and recommends a single, compatible land parcel and point identifier system that can facilitate the collection, storage, manipulation, and retrieval of all land-related data. Presents the chosen system in detail and discusses steps needed for implementation. The choice of a particular identifier system is based on analysis of a number of parcel indentifier systems, including those proposed at the National Conference on compatible land indentifiers--the problems, prospects, and payoffs (CLIPP) held in Atlanta, Georgia, in January 1972. The Clipp Conference papers and workshop reports are included at the end of the book.

Location: 07,01.

73.099

Moyer, D. David, ed.; **Second Symposium on Geographical Information Systems: A synopsis**, (United States. Department of Agriculture. Economic Research Service) 1973, Aug. .

Abstract: A synopsis of the two volume published proceedings of the second symposium on geographical information systems held in Ottawa, Ontario, in August of 1972. Particular emphasis is given to currently operating systems and to the economics of geographical information systems. In other areas, sufficient detail is provided to enable the reader to locate additional material in the proceedings themselves that may be of particular interest to him.

73.100

National Academy of Sciences. Committee on Geography, Washington, D.C.. **Geographical perspectives and urban problems**, PB-218 336/6, (at: Published in Proceedings of Symposium on Geography of the Division of Earth Sciences) 1973.

Abstract: The papers presented in the report provide a broad view of geographic contributions to urban research in an effort to define, evaluate, and help overcome specific urban problems facing the nation. Specific areas of discussion include a geographic conceptualization of urban issues, spatial analysis, land use policies, utilization of natural environment in design and planning, interurban and integrated regional planning, settlement polarization, metropolitan concentration, and rural decline, and emerging forms of urbanization.

73.101

Niemann, Bernard J. Jr.; Laub, John; **Environmental Design Alignment Process (EDAP): The application of computer assisted technique in energy transmission corridor planning**, (Wisconsin Power and Light Company and Madison Gas and Electric Company) 1973.

73.102

New Jersey Department of Community Affairs. **LOIS-Land Oriented Information System - A data resource for planning**, (Department of Community Affairs) 1973.

73.103

Ontario. Ministry of Consumer and Commercial Relations. **Report on the development of new systems and procedures. Land titles office - Toronto. Internal report**, (Ontario Ministry of Consumer and Commercial Relations) 1973.

73.104

Orlob, Gerald T.; Harvey O. Banks, Incorporated, Belmont, CA.. **Conceptual system design for an environmental information base for management of water and related resources by states**, PB-221 124/1, W73 10725,.

Abstract: Research was undertaken to evaluate the present resource information management activities of the states as related to state functions, and to develop a concept for planning and designing a comprehensive state or regional information management system. A state-level Environmental Resources Information Management System was conceptualized, supported by an Environmental Information Base incorporating the organized and systemized aggregation of resource information available from all resource agencies. Conceptual format and guidelines for the Information Base includes identification of Resource Subjects related to state agency functions, and a systemized methodology for classifying and indexing data types and parameters. Institutional arrangements for implementing the concepts were formulated. Tables include results from state surveys, and charts show the structure of the Information Management System and Information Base. The methodology would enable a state to develop and implement an Information Base that would provide compatible, accessible information on a timely basis for resource management by

all agencies.
Location: 17.

73.105

Ornstein, Franklin H., et al.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Technical aspects and problems of parcel number and geocoding identifiers, Land parcel identifiers for information systems,** (at: Land Identifiers - Problems prospects and payoffs) (American Bar Foundation) 1973 pp.App.2, 3-8.

Abstract: Workshop 2 report reviews criteria for parcel identifier and concludes that coordinates of a para-centroid are the best alternative.
Location: 07.

73.106

Penfold, Donald M.; **Rapid recording process,** (Lane County) 1973.

Abstract: Describes an automated land title recording system with computerized indexing, computerized storage of brief property description, microfilm document storage and grid coordinate parcel identification system.

73.107

Peucker, Thomas K.; Mark, David M.; Pfaltz, John L.; Simon Fraser University. Department of Geography, Burnaby, B.C.. **Geographic data structures: Report after year one,** Ad-A020 374/5 ST, RR-1,.

Abstract: This project attempts to combine pertinent portions of geographic theory and modern computer science and implement them in a system for geographic data storage and processing. Details data encoding, digitization, file structures, and image processing.
Location: 05.

73.108

Phillips, John O.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Contribution of geodetic control to better land identifiers,** (at: Land parcel identifiers for information systems. Conference on Land Identifiers - Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.APP. 1, 75-82.

Abstract: Geodetic control provides a national reference for the selection of identifiers for land parcels. The identifier, a single computer word formed from state-county-geographic code, offers maximum flexibility for data storage or retrieval. Plane coordinates derived from geodetic control may be used in land descriptions as a significant part of the file information.
Location: 07.

73.109

Premo, Lester J.; **Charlotte IMIS geographic data base,** (at: 1972 URISA proceedings. Volume 2) (Urban and Regional Information Systems Associaton) 1973 pp.319-332.

Abstract: The benefits of having a significant amount of data attached to each geographic unit and readily accessible in an efficient and timely manner are almost beyond measure. The city of Charlotte has attempted to realize these benefits through the implementation of a very large on-line geographic data base that is also easily accessible through normal batch sources.

73.110

Raytheon Company. Autometric Operations, Wayland, MA.. **Development of a natural resource information system. Volumes 1-5,** PB-228 512-16, USGS do 74 003-005, (United States. Department of the Interior. Bureau of Indian Affairs, BIA-EROS Program) 1973.

Abstract: Includes volumes one through five, with volume four being a user's guide to NRIS processing software. Describes plans for an automated system for handling large quantities of map-based land data. Includes discussion of relevant techniques including digitization, overlays, and composite maps.
Location: 17.

73.111

Rees, W.E.; **Canada Land Inventory Programme,** (University of British Columbia Centre for Continuing Education) 1973.
Location: 01.

73.112

Renshaw, Richard W.; **Geo-references: the language of geo-base systems,** (at: Urban and regional information systems: Information research for an urban society. Volume 2. Papers from the Tenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1973.

Abstract: Explores the area of data standardization, with particular emphasis on the aspects of geobase systems. Within this specific field, the problem of geo-reference standards, that is, clarification of ambiguous terminology employed in identifying the processing information by geographic location, is explored. The problems and prospects of data standardization are stated and the key to progress in this area leadership on a broad basis, is stressed.

73.113

Rey, Paul-Augustion; Gourinard, Yves; Cambon, Francis; Centre National de la Recherche Scientifique. Service de la Carte de la Vegetation, Toulouse, France. **Management of natural resources through automatic cartographic inventory. Progress report Aug.72-Jan.73,** E73-10725, 1973, May.

Abstract: The author has identified the following significant results. Significant results of the ARNICA program from August 1972 - January 1973 have been: (1) establishment of image to object correspondence codes for all types of soil use and forestry in northern Spain, (2) establishment of a transfer procedure between qualitative (remote identification and remote interpretation) and quantitative (numerization, storage, automatic statistical cartography) use of images) (3) organization of microdensitometric data processing and automatic cartography software) and (4) development of a system for measuring reflectance simultaneous with imagery.

73.114

Rhynsburger, D.; **Analytic delineation of Thiessen polygons,** (in: Geographical analysis, Vol.5,) 1973 pp.133-144.
Location: 20, 28, 36.

73.115

Roberts, Willis F.; **Land Registration and Information Service (LRIS). Establishment, programs, functions,** (at: Second Annual Meeting of the Canadian Council on Surveying and Mapping) 1973.

Abstract: Describes the components of the LRIS of the Maritimes and the accomplishments to date (1973).

Location: 07.

73.116

Salmona, Jean; **Status of urban information systems in France,** (at: 1972 URISA proceedings, Volume 2) (Urban and Regional Information Systems Association) 1973 pp.465-470.

Abstract: Describes the cadastre system in operation in France. Data from two sources, administrative files and censuses are included. A block unit system combining these data are described.

73.117

Schmidt, Allan H.; Rickert, John E., et al., eds.; Harvard University. Laboratory for Computer Graphics and Spatial Analysis. Stockton State College. Management Sciences. **Use of geographic base files for graphic displays,** (at: Urban and regional information systems: Information research for an urban society. Volume 1. Tenth Annual Conference of the Urban and Regional Information Systems Association) (URISA and Stockton State College) 1973 pp.207-210.

Abstract: Discusses briefly the utility of graphic displays, and describes several mapping software programmes. Considers the use of graphic displays to create GBF's and the use of GBF's to create graphic displays.

Location: 20.

73.118

Simpson, Robert B.; Dartmouth College. Department of Geography, Hanover N.H.. **Land use in northern megalopolis,** E73-10506, 6, (series: Progress reports),.

73.119

Sizer, Joseph E.; Brown, Dwight; **ERTS-1 role in land management and planning in Minnesota,** (at: ERTS-1 Symposium) 1973 Dec..

Abstract: The emphasis of research on applications of ERTS-1 imagery to land use has been on evaluating the ability of ERTS-1 imagery to update and refine the detail of land use information already in the Minnesota Land Management information system. Work had been directed toward defining the capabilities of the ERTS-1 system to provide information about surface cover by identifying forest, water, and wet-land resources, identifying urban and agricultural development, and testing and evaluating data input and output procedures. A full-scale systems test for several selected pilot areas in the state is nearly complete. Both urban and rural users identified for each test area have been instrumental in indentifying data requirements and analysis needs.

73.120

Sizer, Joseph E.; Minnesota State Planning Agency, St. Paul, MN.. **Land use management in Minnesota. Progress report. Sept 1st - Oct 31st, 1973,** E74-10053,.

73.121

State of Minnesota. **Report by Geocoding Committee: Proposed geocoding standards for purposes of information inter-change,** (State of Minnesota. Intergovernmental Information Services) 1973, Nov..

73.122

State of New Jersey. Department of Community Affairs, Division of State and Regional Planning. **LOIS: Land Oriented Information System - A data resource for planning,.**

Abstract: Describes a land record information system being developed for the state of New Jersey.

73.123

Summer, Harry H.; **Computerized land use/sales activity for marketing allocation,** (at: 1972 URISA proceedings. Volume 1) (Urban and Regional Information Systems Association) 1973 pp.167-174.

Abstract: Treats the area of explanation of the system to those decision makers who lack the basic understanding of data systems. Also treats how the system works and what it does. A modular approach is used in developing the system. Conclusions are drawn that much more attention needs to be given to the explanation of systems to users and that results should be programmed early in the development of the system.

Location: 20.

73.124
Symons, D.C.; LeBlanc, Aubrey L., ed.; National Capital Commission. Research and Computer Services, Ottawa, ONT.. Ontario. Ministry of Transportation and Communications. **Automatic mapping and its relation to urban information systems, Computer cartography in Canada,** (B.V. Gutsell. York University. Department of Geography) 1973 pp.49-61.
Abstract: Reviews the present state of technology in urban information systems, and describes the National Capital commission urban information system's data retrieval, data merging, and geocoding, with examples of data display.
Location: 15,06,28,36.

73.125
Symons, D.C.; **Parcel geocoding system for urban and rural information,** (at: Urban and regional information systems: Information research for an urban society. Volume 2. Papers from the Tenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1973 pp.348-353.
Abstract: A parcel geocoding system for the National Capital Region of Canada has been completed for approximately 200,000 land ownership parcels. The system has the ability to identify all land, streets, water, and geometric features of a 3 degree transverse mercator base with an accuracy of 0.1 meter. The system used polygon retrieval algorithms, three building search patterns, and is linked to a real time graphic display system and data plotter.

73.126
Taylor, D.R.F.; LeBlanc, Aubrey L., ed.; Carleton University. Department of Geography, Ottawa, Ont.. Ontario. Ministry of Transportation and Communications. **Canadian cartographer and the computer: Present trends and future challenges, Computer cartography in Canada,** (B.V. Gutsell. York University. Department of Geography) 1973 pp.1-9.
Abstract: Examines the implications of the increasing importance of the computer in Canadian cartography with respect to economics, accuracy, production speed, and user education.
Location: 15,06,28,36.

73.127
Thornburn, G.; Magar, K.M.; Nagle, G.S.; Canadian Forestry Service. Pacific Forest Research Centre. **Information system for rural land-use planning,** BC-X-75, (series: Canadian Forestry Service. Pacific Forest Research Centre information report), (Canada Department of the Environment) 1973, Jan..
Abstract: Presents a method for calculating and displaying economic consequences of rural land-use proposals using CLUIS (Computerized Land-Use Information System). Describes the mapping data bases and includes technical details for using the system.
Location: 05.

73.128
United States. Bureau of the Census. **Geographic base file system - establishing a continuing program. Conference proceedings. Seattle, WA., Jan. 18-19, 1973,** (series: Computerized geographic coding series), (United States. Department of Commerce) 1973, May.
Abstract: A collection of papers concerning the use of DIME files for geocoding in information systems.
Location: 07.

73.129

United States. Bureau of the Census. **Quality of residential geographic coding,** PHC(E)-1, (series: 1970 Evaluation and Research Program), (U.S. Government Printing Office) 1973.

73.130

United States. Department of the Interior. Geological Survey. Topographic Division. **Research and development in topograhic mapping. Annual report,** PB-221 469/0, USGS-TD-73-001, (U.S. Geological Survey) 1973, Apr..

Abstract: The annual report, covering the 12-month period ending in April 1973, summarizes the research and development activities of the U. S. Geological Survey, Topographic Division in the Office of Research and Technical Standards and in the Region offices at Arlington, Va., Rolla, Mo., Denver, Colo., and Menio Park, Calif. The R and D projects mentioned concern the fields of cartography, field surveys, photogrammetry, orthophotomapping, and space technology. Articles by Division personnel prepared for presentation at meetings and conferences or for publication in professional journals and the Manual of Topographic Instructions are also listed.

73.131

Urban Information Systems Inter-Agency Committee (USAC). University of California. Claremont Graduate School. Long Island University. Municipal Systems Research Project, N.Y.. **Geocoding: A USAC Concern, USAC: Current perspectives,** (University of California. Claremont Graduate School) 1973, Aug..

73.132

Wastesson, Olof, ed.; Sweden. Central Board for Real Estate Data. Development Division. **Report on the current situation of the Swedish Land DataBank Project,** (Sweden. Central Board for Real Estate Data) 1973, Aug. 14.

Abstract: Describes the Land Data Bank of Sweden, a system for handling administrative data about real estate. Considers such aspects as data content, economics and geocoding.

Location: 07.

73.133

Watson, Richard A.; Hagle, Paul; Tweedie, Stephen W.; Bahm, Eldean; Oklahoma State Office of Community Affairs and Planning, Oklahoma City. **Analysis of alternatives for an Oklahoma land use information system,** PB-222 508/4, OK-CAP-SP-73-114,.

Abstract: The report recommends a procedure for developing a state-wide land use informational system. It is organized as follows: general consideration of system purpose and user demands, data scope, detail, comparability, and updating procedure, geographical information systems and recommendation for Oklahoma, data display system considering projection, scale, format, symbolization, method of reproduction and content of maps, systems design and equipment consideration including costs, method of implementation, and a partial list of equipment supplies.

73.134

Wattles, Gordon H.; Moyer, D. David, ed.; Fisher, Kenneth Paul, ed.; **Some thoughts on land title records and computerization,** (at: Land parcel identifiers for information systems. Conference on Land Identifiers-Problems, prospects and payoffs) (American Bar Foundation) 1973 pp.APP. 1, 203-212.

Abstract: Discusses the practicality of various approaches to the computerization of land parcel descriptions, and proposes a system of local land data banks, area banks, and transduction centers for the transcontinental interchange of land information.

Location: 01,07.

73.135
Weaver, Frederick M.; Urban Data Processing Incorporated, Cambridge, MA.. **GEOCODING-'73 Papers Presented at the Geographic Base File Special Interest Group Sessions. 1973 Annual Conference of the Urban and Regional Information Systems Association. Held at Atlantic City, N.J. on 28-31 Aug., 1973**, PB-231 605/7, 1973, Sept..

Abstract: The proceedings include a collection of papers dealing with current topics in the field of geocoding and geoprocessing and chairman's summaries of panel sessions 'Ways to Accommodate Geographic Aspects of Information Systems' and 'SIG-GBF Session on Terminology and Standards' from the 1973 URISA Conference in Atlantic City, New Jersey.

73.136
Weaver, Frederick M.; **Relationship between a parcel level data file and a street segment geographic base file**, (at: Urban and regional information systems: Information research for an urban society. Volume 2. Tenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1973 pp.333-340.

Abstract: A review of basic data file definitions, relationships between parcel and street segment Geographic Base Files (GBF) are noted. The particular value of a parcel level GBF in data editing is highlighted.

73.137
Weaver, Frederick M.; System Development Corporation. Charlotte IMIS Project. **Virtual mapping: A SIG-GBF working paper**, (at: Annual Conference of the Urban and Regional Information Systems Association (URISA)).

Abstract: Presented a conceptual framework which identifies the major elements of a virtual mapping system. Each of the area definition levels (base geography, legal, facility, and administrative) is discussed and examples given. Related software are identified, and grouped into four major categories (Data and Index Maintenance, Utilities, Applications, and Graphics Support). Staff and Equipment requirements are briefly addressed to indicate the necessity for all components of a geoprocessing virtual mapping system. To illustrate the applicability of the processes identified, a grouping of the processes based upon an 'interactive' concept is presented.

Location: 01.

73.138
Wellar, Barry S., ed.; **Remote sensing and urban information systems**, (in: Photogrammetric engineering and remote sensing, Vol.39,) 1973 pp.1041-1050.
Location: 01,10,20,21,23,28,32,36.

73.139
Woldenberg, Michael; Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Geography and the properties of surfaces. Final technical report**, AD-760 632, TR-48-ONR,.

Abstract: The final technical report, is an annotated bibliography of work conducted mainly under Contract No. N00014-67A-0298-0004 at the Laboratory for Computer Graphics and Spatial Analysis, Graduate School of Design, Harvard University. The papers are comprised of purely theoretical investigations on the one hand, usually dealing with geometry and topology, and other investigations which attempt to develop spatial theory from empirical data.

73.140

Woll, A.M.; United States. Bureau of Indian Affairs, Washington, D.C., **Timber Resource Information System. Progress report,** N73-25388,.
Location: 17.

73.141

Wong, Kam W.; Yacoumelos, Nick G.; **Identification of cartographic symbols from TV displays,** (in: Human factors, Vol.15,) 1973 pp.21-31.
Location: 20,28.

73.142

Wunderlich, Gene; **Public costs of land records,** (in: American University law review, Vol.22, no.2) 1973 pp.333-368.

Abstract: Uses results of a national survey of recording offices and regression analysis to isolate and evaluate factors affecting public costs of land title recording. The central thrust of the analysis is to appraise the suitability of the recorder's office as a focal point for improved, multiple purpose land information systems.

73.143

Youngmann, Carl E.; Rickert, John E., et al., eds.; Ohio State University. Department of Geography. Stockton State College. Management Sciences. **CHORO: an automated choropleth mapping,** (at: Urban and regional information systems: Information research for an urban society. Volume 1. Tenth Annual Conference of the Urban and Regional Information Systems Association) (URISA and Stockton State College) 1973 pp.199-206.

Abstract: Describes a mapping software package for the production of choropleth maps of urban areas, and its processing of DIME files.

Location: 20.

73.144

Profile: Manchester. Project title: Management Information System: Land and property, (in: BURISA newsletter, no.5) 1973, June pp.2-7.

Abstract: Describes a proposed urban information system, its file structures, and data retrieval capabilities.

Location: 07.

73.145

Symposium on Title Recordation, (in: American university law review, Vol.22, no.2) 1973, Winter pp.239-406.

Abstract: A series of articles by lawyers, title insurers, economists, and others on possibilities for changes in the way public and private sectors collect, maintain, and report title data. Includes discussion of uniform parcel identifiers, recording office costs to the public and computerization of title record system.

1974
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74.001

Alberta. Department of Environment. Conservation and Utilization Committee. **Land use coding and data needs for planning resource allocation**, (Alberta Conservation and Utilization Committee) 1974, Aug..

Abstract: Concerns land use data classification and its relationship to resource information systems, and planning applications.

Location: 10.

74.002

Alberta. Office of Program Co-ordination. **Executive summary**, (series: Government surveying and mapping study), (Alberta Federal and Intergovernmental Affairs) 1974, Oct..

Abstract: Reviews current governmental surveying, mapping, and air photo operations in Alberta and recommends changes in policy and procedures, principally the creation of a single agency for surveying and mapping.

Location: 01.

74.003

Albond, Harvey N.; **Great expectations**, (at: Geographic Base File Conference).

Abstract: Discusses a property inventory file as it relates to geographic base file

74.004

Alford, M.; Hailstone, E.; Hailstone, J.; Tuley, P.; Overseas Dev. Admin., Surbiton. **Measurement and mapping of land-resource data by point sampling on aerial photographs. Paper 6**, (at: Environmental Remote sensing Symposium) (Edward Arnold (Publ.) Ltd.) 1974 pp.113-126.

Abstract: Describes the processing of land use and land capability data for automated map production, and the mapping capabilities in a Nigerian mapping programme.

74.005

Allen, Walter; Sledge, Brenda; **Santa Monica Mountains of Los Angeles research bibliography**, (California Institute of Technology. Jet Propulsion Laboratory) 1974.

Abstract: Bibliography of material assembled for the land use management information system (Lumis) project. Purpose of project is to demonstrate utility of Lumis in rural, urban fringe area.

74.006

Alvarez, Donald T.; Taylor, M. Lynn; Virkler, Gary W.; Prc Information Sciences Co., McLean, VA.. **Cartographic data base hierarchy. Volume 1. Systems analysis. Volume 2. System Implementation and Testing. Volume 3. Program Documentation. Final reports-June 72-Aug. 73**, AD/A-004 382/8ST, 383/6ST, 384/4ST, PRC-R-1690-Vol-1,-2,-3,.

Abstract: The objective of the Cartographic Data Base Hierarchy project was to analyze, design implement, and test an experimental data base system which employs an hierarchical encoding scheme. Highlights of the implemented system include the following. Design is based on a generalized feature classification system which allows for detailed description of cartographic features. The classification system is composed of feature classes, types, sub-types, eight special descriptions, special numeric, feature name, free text comment, and references to source materials. Implementation, for experimental purposes, is on the Honeywell 635 computer system using Integrated Data Store (IDS) for data management services, and is written in the COBOL Language. Functional capabilities include loading, retrieval, remote query, deletion, and modification. Remote query capability allows a user to interactively communicate with the

CDB through a remote terminal for purposes of accessing and retrieving cartographic information. Hierarchical Data Structure which provides for four geographic segmentation levels, two levels of feature segmentation, and two levels of feature description (i.e., subjective and locational). Storage of geographic coordination strings in a compact incremental format allowing for variable data resolutions. The purpose of Final Technical Report, Volume II, is to describe the data base system implemented, including: data hierarchy and record structure, data base contents, hardware system used, software modules developed, directions for system users, and summary results of system testing. The purpose of Final Technical Report, Volume III, is to present the experimental CDB software operating environment and program documentation. Section II of this volume describes the operational environment of the CDB system including the software configuration, common data area formats, and file formats. Section III presents the program descriptions.

74.007

Amidon, E.L.; Fogg, Peter J., ed.; Keister, Thomas D., ed.; **Computer mapping forest resource management, Use of computers in forestry**, (Louisiana State University) 1974 pp.41-56.

74.008

Ayers, Eunice; Watlingont, M.L.; McMahan, M.K.; Registry of Deeds. Forsyth County, Winston-Salem, N.C.. **Forsyth County land records information system**, 1974, Feb..

Abstract: Describes the parcel information system being developed for Forsyth County. Includes discussion of overall purpose as well as information to be maintained about each parcel.

74.009

Addor, Eugene E.; LaGarde, Victor E.; Stoll, Jack K.; Woods, Harry K.; Army Engineer Waterways Experiment Station, Vicksburg, MS.. **User-accessed computer information system for environmentally sensitive wildlife. Volumes 1, 2 and 3**, AD-787 258/3SL, 259/3SL, 260/3SL, AEWES-TE-M-74-6-1, -2, -3,.

Abstract: The three-volume report describes a user-accessed computerized information system for rare, endangered, and legally protected animal species and subspecies in the United States and U.S. territories. Information for the taxa is arranged by state or territory, and for each taxon the recorded information includes: The degree of protection or welfare benefits accorded the taxon under Federal and state or territorial law, its geographic distribution, including a distribution map that is plotted automatically when requested by the user, the known behavioral characteristics and habitat requirements that relate particularly to its adaptability to structural changes in its environment, its population structure and trends, and a list of information source documents (reference bibliography). The information system contents are described in Volume I, and instructions are given for gaining access to and retrieving information from the information systems. Volume II contains narrative and graphic information. A synopsis of the information available in Volumes II and III is given in tables II-1a and II-1b, which list the threatened mammals and birds, respectively, the states/territories in which they are known to occur, and information. The narrative information for taxa in Volume II consists of reproductions of computer outputs of the narratives exactly as they would appear on retrieval from the information system file. The graphic information for taxa in Volume III consists of the range/habitat map data available form the information system.

74.010

Ayers, Eunice; Registry of Deeds. Forsyth County, Winston-Salem, N.C.. **Review of cartographic automation,** (at: Proceedings of the 14th International Congress of Surveyors. Commission no. 5) 1974.

74.011

Barb, Charles E., Jr.; University of Washington. Urban Data Center, Seattle, WA.. **Automated street address geocoding systems: their local adaptation and institutionalization,** PB-236 145/9 St, UDDC-NSF-74-1, UDC-RR-9, (series: Urban Data Center research reports), (University of Washington) 1974.

Abstract: The reported research bridges the interests of the information systems specialist who is technically interested in developing automated geocoding systems and local public officials such as planning directors, public works directors, school district administrators, or elected office holders who are concerned with ongoing management of an operational geocoding technology. Within the objective of describing key aspects of the technology, the report sketches the evolution of the technology to date, models its potential utility, systems composition, and issues and alternatives accompanying local adaptation. Supplementing field analyses validate the models and objectively report the status of current local adaptation and institutionalization. A typologic glossary of technical terms and a selected bibliography of primary works are appended.

74.012

Barb, Charles E., Jr.; **Hometown geocoding: models and prospects,** (at: 1973 URISA proceedings) (Urban and Regional Information Systems Assocations) 1974 pp.303-315.

Abstract: Sketches two models lending a context to and perspective of local street address geocoding systems development. The first model is a typology of geocoding systems utility in terms of the potential generic application of geocodes derived through street address translation. The second model sketches four levels of local agency involvement in the technology ranging from introverted ad hoc application to community leadership in the technology's transfer.

74.013

Bie, Stein W., Ed.; Netherlands Soil Survey Inst., Wageningen, Netherlands. **Representation of geological and soil information within an automated data handling system,** (in: International Association of Engineering Geology bulletin, no.10) 1974, Dec. pp.27-29.

Abstract: Proposes methods of establishing resource information systems for geological and soil data. Discusses data standardization, file structures, user language and data retrieval.

Location: 20.

74.014

Blachut, T.J., Ed.; Villasana, Ing. J. Alberto, ed.; Canada. National Research Council. Pan American Institute of Geography and History. Committee on Large Scale and Urban Surveying and Mapping. **Cadastre as a basis of a general land inventory of the country, Cadastre: Various functions, characteristics, techniques and the planning of a modern land records system,** (National Research Council of Canada) 1974, May pp.1-21.

Abstract: Briefly reviews the history of cadastral systems and cadastral maps. Considers current requirements in cadastral systems for compatibility with other GIS, and for monitoring and updating data, particularly by means of orthophotography, and emphasizes the necessity of meeting these requirements for planning applications.

Location: 01.

74.015

Blachut, T.J., ed.; Villasana, Ing. J. Alberto, ed.; Pan American Institute of Geography and History. Committee on Large Scale and Urban Surveying and Mapping. **Cadastre: Various functions, characteristics, techniques and the planning of a modern land records system,** (National Research Council of Canada) 1974, May.

Abstract: A collection of papers which aims at helping to understand the need for a comprehensive land records system as embodied in a modern cadastre. Also defines its technical, structural and operational characteristics, offers an example of such a system and provides information on what factors should be considered in planning of a modern cadastral system.

Location: 01.

74.016

Blachut, T.J., ed.; Villasana, Ing. J. Alberto, ed.; Pan American Institute of Geography and History. Committee on Large Scale and Urban Surveying and Mapping. United Nations Ad Hoc Group of Experts on Cadastral Surveying and Mapping. **Medium-scale and large scale surveying and mapping cadastral surveying and mapping. Report of the meeting of the Ad Hoc Group of Experts on Cadastral Surveying and Mapping, Cadastre: Various functions, characteristics, techniques and the planning of a modern land records system,** (National Research Council of Canada) 1974, May pp.48-89.

Abstract: Defines a cadastre, considers its use in planning applications, and emphasizes the necessity for a systematic design of cadastres especially in multipurpose cadastral systems.

Location: 01.

74.017

Bonnet, Penelope; **Feasibility study of the Alberta Environmental Information Foundation,** (Department of the Environment) 1974, May.

Location: 01.

74.018

Boyle, A. Raymond; Prytula, R.; **DIGIT: advanced interactive digitization programme,** (series: Graphics Systems Design and Application Group reports), (University of Saskatchewan. Electrical Engineering Department) 1974, Jan..

74.019

Boyle, A. Raymond; **IMAGE: A minicomputer geographic information system,** (series: Geographic Systems Design and Application Group reports), (University of Saskatchewan. Electrical Engineering Department) 1974, Jan..

74.020

British Cartographic Society. **Automated cartography. Special publication no. 1,** (British Cartographic Society) 1974.

74.021

Capraro, Gerard T.; Hovey, Stanford T.; Rome Air Development Center, N.Y.. **Evolutionary approach for implementing a large multi-user terrain data base through an inter-active system for terrain perspective simulation in-steps program,** AD/A-000 045/5ST, RADC-TR-74-234,.

Abstract: The primary motivation of the study described herein was to provide digitized terrain data to be used in support of Electromagnetic Compatibility (EMC) related problems. Present day data bases are not convenient for the Rome Air Development Center's (RADC) electromagnetic prediction and modelling needs for the design and study of present and future weapon and support systems. Rather than design a system strictly for EMC needs, as has been done in the past in many areas, this technical report describes an approach for developing a multi-user digital terrain data base by using existing governmental computer aids.

74.022

Caprio, J.; Hopp, R.; Williams, J.; Luth, H., ed.; **Computer mapping in phenological analysis, Phenology and seasonality modeling,** 1974.

74.023

Cardew, Richard; Murphy, Peter; **Evaluation and use of data sources in the study of residential land markets,** (at: Proceedings of the 1st Australian Conference on Urban and Regional Planning Information Systems) 1974 pp.18.01-18.19.

Abstract: Suggests ways to rationalize local government data storage procedures. Begins with an attempt to identify users, both existing and potential, and to define their needs. A case study of the data needs of one of these users follows and the array of council records is evaluated. Some attention is then given to the formulation of typologies of market participants, in this case developers and consumers. Thus a basis is provided from which recommendations are made as to the way in which council records might be modified and added to in order to increase their utility. Finally, these suggestions are linked together in an outline of a computer-based information system for residential land markets.

74.024

Carlin, Cyril B.; **Computerization of land records in the Maritime provinces of Canada,** (in: Cincinnati law review, Vol.43, no.3) 1974 pp.487-512.

Abstract: Describes the land registration and information service program to modernize the land record system in the Maritime provinces of Canada. Also discusses the current land title system used and how the new system will be implemented.

74.025

Carlson, E.D., et al.; **Design and evaluation of an interactive geo-data analysis and display system,** RJ1342, (series: IBM research report), (IBM Research Laboratory) 1974, Jan. 25.

74.026

Caswell, Virginia; **Information systems enter space age,** (in: Environmental science and technology, Vol.8,) 1974, Nov. pp.990-992.

Abstract: Discusses information needed to deal with environmental information and suggests that computerized linking of many of these files is the only plausible manner to retrieve data needed in such areas as environmental impact statements and studies.

Location: 02,05,09,20,21,27,28,31,32,33,36,37.

74.027

Chamard, Roger R.; **Semiautomated photogrammetry in support of FALCON,** (at: Second Southern Technical Forestry Conference) 1974, Mar..

Abstract: Forest advanced logging and conservation (Falcon) is an information handling system that combines conservation practices and modern harvesting method needs. Falcon provides data in XYZ coordinate format for complex land use planning.

74.028

City of Los Angeles. Department of City Planning. **Citywide Parcel Information System. Systems design and operations manual. Final report,** PB-261 871/8ST, P-5834000-74, (City of Los Angeles. Department of City Planning) 1974, Nov..

Abstract: The Citywide Parcel Information System (CPIS) is a computerized file of each parcel of land in the city of Los Angeles. The primary source of data for the development of CPIS is the Los Angeles County Assessor's Secured File. To the various data items contained in this file are added census tract number, census block number, and computed parcel area. This document describes in detail the various phases the system has undergone: from planning and design through development and implementation and, finally, to its present phase of edit, update and report generation.

74.029

City of Los Angeles. Department of City Planning. **Description and use of a proposed geographically-based environmental data system. Final report,** PB-258 545/3ST, P-6880301, (City of Los Angeles. Department of City Planning) 1974, May.

Abstract: This report describes a direct, practical system for quickly providing geographically based information needed to make environmental impact assessments. The system consists of block level information from the U.S. Census Bureau, County Assessor, and other local automated files, and grid-based items such as soil types, air quality, and vegetation zones. The system is currently being implemented by the Los Angeles Department of City Planning.

74.030

City of Reading, PA. USAC Project. **Design specifications for geographic base maintenance module,** PB-237 256/3ST, USAC-RPA2-3211, (City of Reading, PA.) 1974, June 24.

Abstract: The report represents a merge of two independent documents produced for the geographic base maintenance module, the design analysis report and the module specification. Section one, the introduction, briefly describes Reading, USAC, and the goals set for the physical and economic development subsystem. Sections two through four represent the initial step in design, module review and analysis. Sections five through eight represent the newly designed GBM system. The report incorporates the new with the old without delineating between the two.

74.031

Cook, B.G.; Johnson, B.V.; **Computer data bank for regional planning,** (at: Proceedings of the 1st Australian Conference on Urban and Regional Planning Information Systems) (Hunter Valley Research Foundation) 1974 pp.5.01-5.10.

Abstract: Describes an information system for planning applications with topological file structures. Discusses the advantages of this type of file structure for data retrieval, data display, and file maintenance.

74.032

Cook, Robert N.; **Land data systems: The next steps,** (in: Cincinnati law review, Vol.43, no.3) 1974 pp.527-555.

Abstract: Reviews several major articles and conferences relevant to the modernization of land record system. Then discusses several steps that need to be considered, including title registration, new surveying data base, and marketable title acts.

74.033

Cooke, Donald F.; **Tutorial on geographic base files for small-area data analysis,** (in: Review of public data use, Vol.2, no.4) 1974 pp.13-20.

74.034

Cooke, L.J.; Morgenstern, D.C.; Alberta. Department of Environment. Conservation and Utilization Committee. **Baseline and interpretative biophysical information: Available data and current programs,** (Alberta. Conservation and Utilization Committee) 1974, Oct..

Abstract: Identifies and describes past and present data gathering programs within the natural resources field which provide either baseline or interpretative

biophysical data for Alberta.
Location: 01.

74.035

Council of State Governments. **Land use policy and program analysis. Number 2. Data needs and resources for state land use planning**, PB-247 714/9ST, RM-540, (Council of State Governments) 1974, Sept..

Abstract: State data needs and resources is one of six problem areas considered in this study of the institutional, technical, and financial problems which states encounter in their use of natural resources and land-use information and in establishing related planning and regulatory programs. Data needs must be considered in the context of the State land-use planning and management process, to which they must be responsive. The Federal Government is able to supply some of these needs and these sources are presented.

74.036

Craig, Tom; Miller, Lee D.; **Review of computer-based resource information systems**, 2, (series: Land use planning information reports), (Colorado State University) 1974.

74.037

Craven, C.W., et al.; **Regional environmental systems analysis program progress report. June 1973-June 1974**, (Oak Ridge National Laboratory) 1974.

74.038

Crawley, B.G.; **Automatic contouring on the Gestalt Photomapper 2-1**, (at: ACSM/ASP Fall Convention) 1974.

74.039

Csati, Erno, ed.; **Automation - The new trend in cartography. International Cartographers Association. Scientific Work Session. Final report. Budapest, Hungary. Aug., 1973**, (Institute of Surveying and Mapping) 1974.

Abstract: A collection of papers which covers such topics as: automated mapping, and mapping programmes, contouring, GIS, digitization, map revision, data generalization, mapping data bases, and orthophotography.

74.040

Csati, Erno, ed.; **Automation-The new trend in cartography. International Cartographers Association. Scientific Work Session. Final report. Budapest, Hungary. Aug., 1973**, (Institute of Surveying and Mapping) 1974.

Abstract: A collection of papers which covers such topics as: automated mapping, and mapping programmes, contouring, GIS, digitization, map revision, data generaliztion, mapping data bases, and orthophotography.

74.041

Dangermond, Jack P.; Antenucci, John; **Maryland Automated Geographic Information (MAGI) system**, (Maryland. Department of State Planning) 1974.

74.042

Davis, Christian; Boetje, Gerald; Devorkin, Donald; **County boundary coordinate file for graphic display of data, Geographic base (DIME) File System: A forward look**, GE-60-5, (United States. Department of Commerce. Bureau of the Census) 1974, Oct..

74.043

Dickie, G.J.; Williams, G. Daniel; **Development of a computer-based file on oil and gas pools,** 75-22, (series: Geological Survey Canada papers), (Canadian Centre Gesscience Data) 1974.

74.044

Dillman, R.D.; Vincent, R.K.; Environmental Research Inst. of Michigan. **Unsupervised mapping of geologic features and soils in California,** (at: Proceedings of the 9th International Symposium on Remote Sensing of the Environment) (Environmental Research Institute of Michigan, Willow Run Lab) 1974 pp.2013-2025.

Abstract: Describes a photographic and computer-implemented method of analysing and mapping the distribution of geologic minerals using laboratory spectral curves for automatic scene classification. Evaluates the accuracy of the technique.

74.045

Dison, D.W.; Herring, B.E.; Vachon, R.I.; Wysong, R.; Auburn University. Engineering Experiment Station. **ARIS:Alabama Resources Information System,** (Alabama State Development Office, State Planning Division) 1974, June.

Abstract: Presents design considerations for ARIS, a proposed system which is to be adaptable to user needs for the retrieval of land use data. Describes system output, data processing and manipulation.

Location: 20.

74.046

Dobner, Horst K.; **Urban cadastral cartography and data bank in the State of Mexico,** (at: Seventh International Conference on Cartography, ICA).

74.047

Dueker, Kenneth J.; Talcott, Richard L.; Goodchild, M.F.; Milligan, John; **Land resource information system: A development and demonstration for the State of Iowa,** (series: Final report series), (University of Iowa Institute of Urban and Regional Research) 1974, Dec..

Abstract: This report resulted from a pilot project to develop and demonstrate a land resource information system capability, which relies on encoding line images rather than encoding directly to grid areas. A hybrid system was selected, enabling line image data in two forms and which allows for conversions to grid files for specific types of analysis and mapping.

74.048

Dueker, Kenneth J.; University of Iowa. Institute of Urban and Regional Research. **Urban geocoding,** (in: Annals of the Association of American Geographers, Vol.64, no.2) 1974 pp.318-325.

Location: 07,14,20,27,28,36.

74.049

Dunham, Allison; **Land parcel identifiers and the Uniform Land Transaction Act,** (in: Cincinnati law review, Vol.43, no.3) 1974 pp.469-486.

Abstract: Discusses the need for a unique land parcel identifier and then describes a system for land title document recording that is being proposed for consideration by the commissioner on uniform state laws, to be an integral part of the uniform land transaction.

74.050

Durfee, R.C.; **Oak Ridge Regional Modeling Information System (ORRMIS), Part 1,** ORNL-NSF-EP-73, (Oak Ridge National Laboratory) 1974, Sept..

74.051

Dyba, Jerome E.; **Consolidated property file feasibility study. Final report,** (Anne Arundel County) 1974, June.

Abstract: Presents results of feasibility study carried out in regard to development of an information system to handle land related data. Includes a review of present system, proposed system, and a benefit cost analysis.

74.052

Easton, Cam H.; **Forsyth County Land Records Information System,** (at: International Association of Assessing Officer. 1974 Conference) (International Association of Assessing Officers) 1974.

Abstract: Describes the Forsyth County, North Carolina, land records system. System includes computerized title record index, uniform parcel numbering, and comprehensive mapping program.

74.053

Edson, Dean T.; **Management study review, Automation - The new trend in cartography,** (Institute of Surveying and Mapping) 1974.

74.054

Ellefson, Richard; Gaydos, Leonard; Swan, Philip; Wray, James R.; **New techniques in mapping urban land use and monitoring change for selected U.S. metropolitan areas: An experiment employing computer-assisted analysis of ERTS-1 MSS data,** (at: International Society of Photogrammetry Symposium) (United States Geological Survey) 1974.

Abstract: Successful experiments in mapping urban land use, through employment of pattern recognition algorithms in a digital computer by processing multispectral scanner data from earth resources technology satellite-1, have been conducted. Map forms are computer line-printer and colored prints from a film recorder. Numerous categories of land use and land cover were identified and mapped to make full use of the potential of the computer/scanner system. Several innovations in machine-aided analysis were developed in response to: (1) making rural/urban distinctions; (2) arranging data in map format; (3) Aggregating results by statistical units; and (4) solving other peripheral problems. Recitation and critique of the evolved methodology reveals process made, identifies limitations of the system, and suggests directions for future improvement.

74.055

Feddes, Robert G.; Air Force Environmental Technical Applications Center, Scott AFB, IL.. **Development of a gridded data base. Appendix A. The 3DNEPH data base. Appendix B. Analysis data base summary. Appendix C. The usefulness of the gridded conventional data base for climatic application,** AD-A056 234/8ST, USAFETAC-TN-74-2,.

Abstract: With the advent of numerical analysis adapted to a large computer system, global automated analysis of a variety of meteorological parameters became operational at the Air Force Global Weather Central (AFGWC). At the USAF Environmental Technical Applications Center (USAFETAC), these gridded analyses are maintained as one of the historical data sets used by USAFETAC to support a wide variety of data application requests. The gridded analyses now used at USAFETAC are in two distinct forms and they include a global analysis of conventional parameters and a global analysis of the cloud scene at a variety of standard analysis times. This Technical Note describes the

USAFETAC efforts in the development of these historical data bases. This report contains an explanatory appendix for each data base, Appendix A - 'The 3DNEPH Data Base,' Appendix B - 'Analysis Data Base Summary,' and Appendix C - 'The usefulness of the Gridded Conventional Data for Climate Application'.

Location: 17.

74.056

Ferguson, James E.; **Property valuation and equalization system: A module from the Wichita Falls prototype Integrated Municipal Information System, International Property Assessment Administration, Volume 6,** (International Association of Assessing Officers) 1974 pp.258-269.

Abstract: Provides brief overview of the complete information system being developed for Wichita Falls, Texas, then concentrates on proves, the land value assessment module of the system. Benefits to the tax department are the major thrust, with references to benefits to other city departments and outside agencies.

74.057

Gambino, Lawrence A.; Crombie, Michael A.; United States. Army Topographic Labs. Fort Belvoir, VA.. **Digital mapping and digital image processing,** (in: Photogrammetric eng., Vol.40, no.11) 1974, Nov. pp.1295-1302.

Abstract: Digital mapping and digital image processing are discussed along with related software and hardware. Digital Image Manipulation and Enhancement System (DIMES) software is discussed indicating its potential as a flexible R&D tool for conducting studies in digital image processing as applied to mapping and charting problems. Preliminary results of derived parallax data from correlation of digitized grey shade data are presented along with information on parallel computers and their impact on this process.

Location: 10,20,21,23,28,32,36.

74.058

Garcia, Ing. Jose Alberto Gonzalez; Blachut, T.J., ed.; Villasana, Ing. J. Alberto, ed.; Ingeniero Guzman, Pablo Arnoldo, National Geographic Institute, El Salvador. Pan American Institute of Geography and History. Committee on Large Scale and Urban Surveying and Mapping. **Use of orthophotographic techniques in a modern cadastre including a data bank, Cadastre: Various functions, characteristics, techniques and the planning of a modern land records system,** (National Research Council Canada) 1974, May pp.90-137.

Abstract: Defines the purpose of cadastres and cadastral maps. Describes the cadastral programme in EL Salvador, use of orthophotography in cadastral map production, and the planned development of a cadastral data bank.

Location: 01.

74.059

Gates, William E. and Associates, Inc.. **Land-based modelling system for water quality management studies,** (Virginia Electric and Power) 1974.

74.060

Gunther, Alden C.; Army Engineer Topographic Laboratories, Fort Belvoir, VA.. **System for topographic inquiry. Number 1. Micrographic subsystem. Final report Oct. 70-Sept. 73,** AD-923 480/8ST, ETL-ETR-74-2,.

Abstract: The purpose of the development was to demonstrate the concept of microform topographic data storage and to develop a software package to control a micrographic system. A commercially available system was leased for experimentation, and a set of specifications for operational hardware was developed. A software description, the proposed hardware specifications, and a pilot test operation flowchart are included in the report.

74.061

Hadfield, Colin D.; **Computerization of land title records**, (in: Cincinnati law review, Vol.43, no.3) 1974 pp.513-525.

Abstract: Discusses the computerization of registered land titles in Canada in the area west of the Maritime Provinces, with emphasis on Ontario. Distinguishes between title recording and title registration and reviews the system used in each province, along with extent of efforts to computerize the title record system.

74.062

Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **POLYVRT: A program to convert geographic base files**, (Harvard University) 1974.

74.063

Henssen, Ir. J.L.G.; Blachut, T.J., ed.; Villasana, Ing. J. Alberto, ed.; International Office of Cadastre and Land Records. The Hague, Holland. Pan American Institute of Geography and History. Committee on Large Scale and Urban Surveying and Mapping. **General aspects of cadastre and land registration, Cadastre: Various functions characteristics, techniques and the planning of a modern land records system.**, (National Research Council Canada) 1974, May pp.22-47.

Abstract: Describes the role of cadastres and cadastral maps in legal and fiscal land administration and considers the development of multipurpose cadastral systems for map revision and planning applications. Also describes numbering systems for land parcel identification.

Location: 01.

74.064

Hill, Miles; Hirsch, Ernest; Kirby, Malcolm; Lowe, Jack; Perry, George; Schwarzbart, Gideon; Valfer, Ernst; United States. Pacific Southwest Forest and Range Experiment Station. Management Sciences Staff, Berkeley, CA.. **Analysis of computer support systems for multi-functional planning. Final reports 1 and 2**, PB-278 433/8ST and PB-278 434/6ST, FS-MASS-1,2, (United States. Department of Agriculture) 1974, Jan. and July.

Abstract: Report 1 contains an analysis of the present status of development and use of timber resource planning systems, their utility, applicability, transferability, costs and benefits. The report specifically analyses the Timber Resource Allocation Model (Timber-RAM), the Resources Capability System (RCS), the Simulating Intensively Managed Allowable Cut (SIMAC) model, and the Timber Evaluation and Planning (TEVAP) model. The four systems are compared for purposes of timber management, and the gaps are also identified. One appendix discusses the general problems related to the development and use of major computerized planning systems. Report 2 includes an analysis of Range RAM, Roading RAM, and non-timber applications of RCS including hydrologic and soils simulation programmes. Analysis of the Transportation Analysis Group (TAG) of the Forest Service includes: Timber and Recreation Transport Analysis Models, Transportation Information System (TIS) and Road Inventories (TIS-ROADS), Traffic Surveillance Program, Recreation Interview, Fire Station Location, Road Investment Strategy, Vechicle Operating Cost Model, One Lane Road Simulator and Allocation of Road Maintenance Funds. This is the first published series of a comprehensive systems evaluation.

Location: 10,17.

74.065

Hoffman, Morton; Hoffman (Morton) and Co. Inc., Baltimore, MD.. **Characteristics and requirements of a prototypical housing information system (Based on an evaluation of operating systems in Indianapolis-Marion County, IN. and six other selected sample jurisdictions). Final report**, PB-258 952/1ST,.

Abstract: The report defines a prototypical metropolitan housing information system which can support housing planning activities including preparations of housing opportunity plans and housing assistance plans. The report is based upon the results of a study of seven existing metropolitan housing information systems in Indianapolis, Ind., Charlotte, N.C., Dade County, Fla., Minneapolis, St. Paul, Minn., Philadelphia, Pa., Rock Island, Ill., and Wichita Falls, Texas. The report describes system objectives, functional components (user groups, geographic detail, data items and processing) and types of needed analysis using housing information.

74.066

Hoinkes, Christian; **Design considerations for an experimental computer aided mapping system, Automation - The new trend in cartography**, (Institute of Surveying and Mapping) 1974.

74.067

Holm, Nils; **Alternative forms of spatial referencing: An evaluation**, (at: Paper presented at the First Annual Meeting of BURISA).

74.068

Holmes, Harvard H.; Austin, D.M.; Benson, William H.; University of California. Lawrence Berkeley Laboratory. **Mapedit system for automatic MAP digitization**, LBL-3072,.

74.069

Horak, Thomas E.; **Modernizing land data systems**, (in: Title news, Vol.1974, July,) pp.4-6, 15-16.

Abstract: Reviews efforts to develop comprehensive land data systems (e.g., Culdata, Mackinac, and Atlanta Clipp Conferences) and analyzes the impact of such systems on the title insurance industry.

74.070

Humphries, Brian; **Land information system for planners**, (at: Proceedings of the First Australian Conference on Urban and Regional Planning Information Systems) (Hunter Valley Research Foundation) 1974 pp.2.01-2.26.

Abstract: Outlines a system concept, called a land information system, having applicability to the administration of land in the Australian context. Outlines a pilot project currently being undertaken in the Maitland Area of N.S.W. to test the developed theories of the system concept. Intended to be of interest to people engaged in the administration of land generally and is presented as much as possible, in non-data processing terms.

74.071

Hysom, John L. Jr.; **Urban Development Information System: A land use decision-making tool in Fairfax County, Virginia**, (at: 1973 URISA proceedings) (Urban and Regional Information Systems Association) 1974 pp.43-57.

Abstract: Concerns the Urban Development Information System for land use data in planning applications. Discusses updating and file structures as well as the benefits of UDIS.

74.072

Klingebiel, A.A.; Myers, Victor I.; **ERTS-based land resource inventory for Mexican national water study**, (in: Soil conservation, Vol.40, no.4) 1974, Nov. pp.18-20.

Abstract: Describes development of a plan and procedure for preparation of a potential land use map of Mexico. Map is based on interpretation of available soil related resource data, and on imagery from the earth resources technology satelite (ERTS).

Location: 10,20,28,35.

74.073

Landini, Albert J.; Paul, Charles K.; **Land use information system for the Santa Monica Mountains of Los Angeles**, (California Institute of Technology. Jet Propulsion Laboratory) 1974.

Abstract: Concerns LUMIS, a system for urban land use planning applications with polygon overlay capability. Discusses data collection, and data referencing.

74.074

Lane County, OR.. **Inter-Regional Information System (IRIS)**, (Lane County, OR.) 1974 (circa).

Abstract: Describes a shared-use information system developed for use of counties in Oregon. General discussion on development procedures and philosophy.

74.075

Lewis, Joseph; **Geocoding in Denver: Administrative problems and an application**, (at: 1973 URISA proceedings) (Urban and Regional Information Systems Association) 1974 pp.315-335.

Abstract: Discusses the definition of geocoding and related terms, the history of attempts in the city and county of Denver to establish standardized geographic reference systems, and administrative problems encountered in attempting to approach the subject of geocoding from a total municipal agency viewpoint. Describes a specific example of how a city agency has used some of the tools associated with the concept of geocoding for specific urban applications.

74.076

Lyle, John; Von Wodtke, Mark; California Polytechnic University. **Information system for environmental planning**, (in: American Institute of Planners journal, no.No) 1974, Nov..

Abstract: An information system to aid in land use planning by considering physical factors is described. The system is based on interactions of location, environmental effects, and developmental actions. The system is designed to identify optimum locations for development on the basis of natural processes, to make qualitative predictions of environmental effects of proposed developments, and to determine what human activities will least affect natural processes on given land.

Location: 20,28,36.

74.077

McLelland, William G.; Moritz, Barry K.; **Interactive on-line multi-minicomputer configuration for application to cartography**, (at: Proceedings of the ACSM 34th Annual Meeting) 1974.

74.078

Merchant, J.W.; Waddell, B.H.; Kansas University Centre for Research, Inc. Technology Applications Laboratory, Lawrence. Use of **high altitude aerial photography to inventory wildlife habitat in Kansas: An initial evaluation**, N74-22032/8, TR-2230-14-1,.

Abstract: The use of aerial photography as a method for determining the wildlife conditions of an area is discussed. Color infrared photography is investigated as the most effective type of remote senor. The characteristics of the remote sensing systems are described. Examples of the remote sensing operation and the method for reducing the data are presented.

74.079

Merriam, D.F.; **Resource and environmental data analyses,** 921, (series: U.S.G.S. professional papers), (United States Geological Survey) pp.37-45.

74.080

Meyer, Morton A.; Silver, Jacob; **GBF/DIME: A data resource. CUE: A maintenance resource,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association and Stockton State College) 1974 pp.311-322.

74.081

Miles, Thomas C.; **Mapping with computers,** (in: Computer decisions, Vol.6, no.7) 1974, July pp.20-21.

Abstract: Computer graphics and mapping techniques are presented as effective ways of transforming large data bases, into forms that reveal relationships that otherwise might be overlooked, and supply the data in a format that is easily interpreted. Includes a discussion of shaded area mapping, limited by difficulty in displaying multiple data elements while still providing readable graphics, and of symbol maps, with their wider range of display options. The two general types of plotted symbols used most often are described--the circle/square symbol and the focus indicator symbol--with the latter preferred for its capability of displaying an almost unlimited assortment of values and ranges of data elements.

Location: 27.

74.082

Milligan, John; **Final report 2-Land Resource Information System: A development and demonstration for the State of Iowa,** (University of Iowa. Institute of Urban and Regonal Research) 1974.

74.083

Mock, S.J.; La Garde, V.; Tucker, W.B.; **Arctic Terrain characteristics data bank,** 247, (series: United States Army Corps of Engineers. Cold Regions Research Engineering Laboratory. Technical reports), (United States Army Corps of Engineers. Cold Regions Research Engineering Laboratory) 1974, Mar..

Abstract: Concerns the CRREL data bank, its development, data processing techniques, and contents.

74.084

Morrison, Joel L.; University of Wisconsin. Department of Geography. **Changing philosophical-technical aspects of thematic cartography,** (in: American Cartographer, Vol.1, no.1) 1974 pp.5-14.

Abstract: Outlines two recent changes in thematic cartography, and considers how these changes influence cartographers. Discusses the impact of automation in cartography and the effects of increased attention to thematic cartography.

Location: 01,20,36.

74.085

Moyer, D. David, ed.; **Parcel identifiers for modern land information systems,** Vol.6, (series: International Property Assessment Administration), (International Association of Assessing Officers) 1974 pp.244-257.

Abstract: The importance of an efficient land data system is discussed, along with several deficiencies in the land data systems currently used for land transfer, assessment, and land-related research. The proposed American Bar Foundation/Economic research service uniform parcel identifier is discussed, particularly as to correcting the deficiencies noted earlier.

74.086

Murch, R.A.; **Land Department Land Inventory/Property Management System. Preliminary study. Project no. 53**, (Management Systems Development Department) 1974, July.
Location: 01.

74.087

Murch, R.A.; **Land Department Land Inventory/Property Management System. System proposal. Project no. 53**, (Management Systems Development Department) 1974, Oct. .
Location: 01.

74.088

Ontario. Ministry of Consumer and Commercial Relations. Survey Task Force. L.R.M.C.. **Land index and display sub-system. Internal report**, (Ontario. Ministry of Consumer and Commercial Relations. Survey Task Force. L.R.M.C.) 1974.

74.089

Ontario. Ministry of Natural Resources. Task Force on Geographical Referencing. **Proposal for basic mapping. Internal report**, 1, (Ontario. Ministry of Natural Resources) 1974.

74.090

National Technical Information Service. **Current methodologies for determining the spatial distribution of air polluting emissions**, PB-237 864, 1974, July.

Abstract: Current methodologies for determining the spatial distributions for mobile and stationary source emissions are described. Coordinating systems. For Geocoding polluting emissions, such as the California State plane coordinate system and the uniiersal transverse mercator system, are examined and compared. Techniques for quantifying and disaggregating regional mobile source emissions to grid systems compatible with regional air quality models currently in use are dissused.

74.091

Palmerlee, Thomas M.; Domsch, Ronald E.; **Parcel identification and data system: A case study in implementing information system**, (at: Urban and regional information systems: Perspectives on information systems. Papers from the Eleventh Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1974 pp.393-403.

Abstract: Describes the process of construction of a land parcel identification system in a medium sized city, Kansas City, Kansas, as well as plans for transformation of the identification system to a parcel-level land data system. Observations on the process of initiating information system projects in such cities are also included. Among these are the desirability of starting with modest projects and modest resources so that both technicians and users can better specify system requirements. It is desirable to design the entire information systems effort so that projects can be added in a modular incremental manner so that a comprehnsive system can be developed.

74.092

Podehl, W.M.; **Role of a cadastre in statistical information systems**, (at: Conference on Concepts of a Modern Cadastre) 1974.

74.093

Ontario. Ministry of Natural Resources. Task Force on Geographical Referencing. **Proposal for basic mapping. Internal report**, 1, (Ontario. Ministry of Natural Resources) 1974.

74.094

Palmerlee, Thomas M.; Domsch, Ronald E.; **Parcel identification and data system: A case study in implementing information system**, (at: Urban and regional information systems: Perspectives on information systems. Papers from the Eleventh Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1974 pp.393-403.

Abstract: Describes the process of construction of a land parcel identification system in a medium sized city, Kansas City, Kansas, as well as plans for transformation of the identification system to a parcel-level land data system. Observations on the process of initiating information system projects in such cities are also included. Among these are the desirability of starting with modest projects and modest resources so that both technicians and users can better specify system requirements. It is desirable to design the entire information systems effort so that projects can be added in a modular incremental manner so that a comprehensive system can be developed.

74.095

Podehl, W.M.; **Role of a cadastre in statistical information systems**, (at: Conference on Concepts of a Modern Cadastre) 1974.

74.096

POLARIS. **Survey Task Force: Project no. 2- Map base and resource inventory**, (POLARIS. Toronto Land Titles Office) 1974, Jan. 31.
Location: 01.

74.097

Renshaw, Richard W.; **Geocoding: A glossary of terms**, (at: Urban and regional information systems: Perspectives on information systems. Papers from the Eleventh Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1974 pp.410-419.

Abstract: A preliminary glossary of terms related to geocoding is presented for the consideration of special interest groups: geographic base files, and data standardization.

74.098

Richmond, Dale E.; City of Calgary. Management Systems Development Department. **Joy of GEORGE - Fully illustrated: A gourmet guide to municipal geocoding**, (at: Twelfth Annual Conference of the Urban and Regional Information Systems Association) (City of Calgary) 1974, Aug..

Abstract: Provides a descriptive account of the progress made in adapting the geographically referenced data storage and retrieval system for use with the Urban Information System under development in Calgary. GEORGE, the Geocode Report Generator is described briefly.
Location: 01.

74.099

Roberts, Willis F.; **Lecture notes on socio-political problems of establishing cadastre need**,.

Abstract: Defines the purpose of a cadastre and considers problems and issues in determining data needs and system capability requirements. Discusses advantages of establishing land data banks.
Location: 01.

74.100

Rogers, Robert H.; Reed, Larry E.; Pettyjohn, Wayne A.; Bendix Aerospace Systems Division. Ann Arbor, MI.. **Automatic mapping of strip mine operations from spacecraft data,** (Bendix Aerospace Systems Division) 1974 (circa).

Abstract: Describes a technique for automated mapping of strip mining and reclamation, using remote sensing data, and provides examples of its use.

Location: 95.

74.101

Roach, John T.; Kelley, John W.; Cornell University. Water Resources and Marine Sciences Center. Ithaca, N.Y.. **Application of the LUNR Inventory System for water resources planning and management in the Susquehanna River Basin,** PB-233 841/6, TR-72,.

Abstract: A study is made of the Land Use and Natural Resources inventory. (LUNR) to New York State to demonstrate its application and management in the Susquehanna River Basin. The feasibility of combining in one data bank information needed for comprehensive water resources planning and management is explored. LUNR is a computer-based system of data storage and retrieval that accommodates point, area and linear information which is identified, located and stored according to a geographic referencing system. Much information is obtained from remote sensing, but the system is very flexible. It is held that what occurs on the land in a river basin has an impact upon the water resources of that basin. The development, characteristics and intricacies of the LUNR system are described. First an overview and chronology are presented. Data sources, base maps, scale, geographic referencing, information classification, and more are evaluated in detail. Next, examples of LUNR applications in the Susquehanna River Basin are considered.

74.102

Rowe, Peter G.; Williams, Donald L.; Sharpe, Carl P.; Lucas, Therese C.; Bavinger, William A.; Rice Center for Community Design and Research. Houston, TX.. **Environmental analysis for development planning Chambers County, TX. Volume I. An approach to natural environmental analysis,** PB-268 745/7ST,.

Abstract: The central research question of this component centers around how information about the natural environmental characteristics of a given geographic area can be integrated with information about various types of land use so that man-made changes in the natural environment can be predicted and the natural environmental development capability assessed. This technical report represents the research approach and findings for Phase One of the project. Chapter 2 proposes an advanced concept to determining natural environmental capability for land development and a means for predicting change plus an overview of the research methodology. Chapters 3 and 4 deal with the establishment of a natural environmental data base for the subsequent analysis. Chapter 5 presents an integrated and detailed description of each major aspect of the Chambers County natural environment. Chapter 6 focuses on selected land uses and their associated activities and characteristics. Chapter 7 presents a further expansion of the central concept of natural environmental capability and its relationship to land use. Chapter 8 presents results of the cluster analysis interpretation. Chapter 9 presents preliminary investigations of environmental impact monitoring. Chapter 10 offers land management recommendations, and Chapter 11 presents a brief summary of the findings.

Location: 17.

74.103

Runka, G.G.; **Physical resource data needs in land use planning,** (at: Presented at Technical Workshop to Develop an Integrated Approach to Base Data Inventories for Canada's Northland) (B.C. Land Commission) 1974.

Location: 01.

74.104

Schatz, Harry; Duddleson, William; Ann Arbor Community Planning and Management, MI.. **Housing Information System. Volume 2. Housing stock data base applications. Final report,** PB-235 661/6ST,.

Abstract: The two reports generated by this project describe the final step in making operational the computerized system of all land parcels within the City of Ann Arbor (Physical Environment Attribute Repository or P.E.A.R.). Vol. 2 documents a series of specific applications made during the year that underscore the usefulness of the system.

74.105

Schofield, Jack; **Pragmatic use of the DIME file, Geographic base (DIME) file system: A forward look,** (at: Proceedings of Conference co-sponsored by the Massachusetts Bureaus of Transportation Planning and Development, the Transportation Systems Center, and the Urban Systems Laboratory of M.I.T.) 1974 pp.33-37.

74.106

Schreiber, R. Kent; Stephenson, R.L.; Goff, F. Glenn; West, Darrell C.; Muse, Gwendolyn; Oak Ridge National Laboratory, TN.. **Geoecology of information system. Part I. Biogeographic mapping of species ranges: Documentation of input and data checking procedure for computer storage and retrieval of information,** EDFB-IBP-74-5,.

Abstract: The rationale behind the design and development of a regional scale data bank for biogeographical information is presented. Counties provide the basic cell for data storage and retrieval. A procedure for manual digitalization and coding of species range maps is applied to three species found in Little's atlas of United States trees. The computer program for storing and retrieving this spatial data is documented.

74.107

Schweitzer, Richard H., Jr.; United States. Bureau of the Census. **Computer mapping with micrographics, Geographic base (DIME) file system: A forward look,** Ge60, 5, (United States. Bureau of the Census) 1974, Oct..

74.108

Schweitzer, Richard H., Jr.; **Micrographics: A new approach to automated cartography and graphics,** (at: Proceedings of 22nd International Technical Communications Conference) 1974.

74.109

Sizlinger, Denis D.; **Seeing the SITE in Denver, Colorado,** (in: Government data systems, Vol.3, no.5) 1974, Sept./Oct..

Abstract: Discusses the use of Denver Planning Office parcel files

Location: 09.

74.110

Skinner, William; North Carolina State. Department of Administration. Office of State Planning. **Design concepts for the North Carolina Planning and Land Use Management Information System. Final report,** PB-238 430/3ST,.

Abstract: The complex nature of planning for the use of the nation's land requires that a great deal of land-related information be available in a form that is easily understood and utilized. The North Carolina Land Policy Act of 1974 specifically charges the Land Policy Council with the responsibility of overseeing the development of an information system on land resources for the entire state. Information concerning such areas as soil type, geological feature, education, population, and economic factors are critical to the land use planning process. This study of design concepts sets forth the initial concept of such a system and outlines subsequent steps that will be needed to ultimately create a useful functioning land information system. It provides a multi-level grid cell structure as well as the coordinate identification of data points.

74.111

Smedes, Harry W.; Nez, George; Turner, A. Keith; Lutzen, Edwin E.; Reed, John C., Jr.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Land-use planning aided by computer cellular modelling/mapping system to combine remote sensing, natural resources, social and economic data,** (at: Proceedings of the 9th International Conference on Remote Sensing of the Environment. Volume 1) (Environ. Res Inst. of Michigan. Willow Run Lab) 1974 pp.289-298.

Abstract: Discusses the need for integration of information from a wide variety of fields for planning applications.

74.112

Smith, David V.; Austin State University, Nacogdoches, TX.. **Automated image processing in forestry,** (in: Photogrammetric Engineering, Vol.40, no.10) 1974, Oct. pp.1187-1190.

Abstract: A summary of some of the important efforts currently being made in the application of automated image processing in natural resources.

Location: 10,20,21,23,28,32,35.

74.113

Soloski, R.B.; Ryan, Hollis F.; Lewandowski, G.M.; Hancock, W.R.; Ahlgren, R.C.; Gaidasz, G.; Calspan Corporation, Buffalo, N.Y.. **Semi-automatic map digitizing system,** (at: IEEE Electron and Aerospace Systems Convention/EASCON '74) (IEEE) 1974 pp.477-481.

Abstract: An interactive computer system has been developed to digitize topographic charts and thematic maps (such as land use maps). This system, called DIGIMAP, uses automatic image processing and computer assisted operator editing techniques for the encoding of line data. The DIGIMAP System provides a new, efficient method for computer encoding of geographic and cartographic information.

74.114

Stegena, L.; Csati, Erno, ed.; **Tools for the automation of map generalization, Automation: The new trend in cartography,** (I.C.A. and Institute of Surveying and Mapping) 1974 pp.66-95.

74.115

Stephenson, R.L.; Oak Ridge National Laboratory, TN.. **Tvamap: a programme for plotting geographically distributed data,**.

74.116

Aaltonen, R.A.; Cooper, M.A.; Sutterlin, P.G.; **Some considerations in management of computer - processable files of geological data,** (in: Journal International Association Mathematical Geology, Vol.6, no.4) 1974 pp.291-310.

74.117

Talcott, Richard L.; Dueker, Kenneth J.; **Government policy and decision making implications for land resource information system design,** 25, (series: Technical report series), (University of Iowa. Institute of Urban and Regional Research) 1974, Mar..

74.118

Taylor, L.; Antenucci, John; **Maryland Automated Geographic Information (MAGI) System**, (State of Maryland. Department of Planning) 1974, May.

74.119

Tessari, E.J.; Land-Related Information Systems. **Land use classification and coding. Part I**, (series: Land-Related Information Systems reports), (Alberta. Task Force on Urbanization and the Future) 1974, Jan..

Abstract: Reviews seven geographical location systems which could be used for a common reference system for Alberta. Co-ordinate systems are described, and details of advantages, disadvantages and current users are also provided.

Location: 01.

74.120

Tessari, E.J.; Land-Related Information Systems. **Land use classification and coding. Part 1. Appendices**, (series: Land-Related Information Systems reports), (Alberta Task Force on Urbanization and the Future) 1974, Jan..

Abstract: Provides lists of attribute codes for land use data classification which are employed by several organizations.

Location: 18.

74.121

Tessari, E.J.; Land-Related Information systems. **Location identification. Part 2**, (series: Land-Related Information Systems reports), (Alberta Task Force on Urbanization and the Future) 1974, Apr..

Abstract: Primarily concerned with location and land unit (parcel) identifiers. Standard location and land unit identifiers are of equal importance to standard classification systems in the matter of compatibility among information systems and, thus, better use of available information. Also stresses the requirement for a continuous effort toward coordination of land-related information systems through the establishment of a permanent agency for the purpose.

Location: 81.

74.122

Thomasson, R.D.; **Human and physical data needs in land use planning**, (at: Presented at Technical Workshop to Develop an Integrated Approach to Base Data Inventories for Canada's Northland) (B.C. Land Commission) 1974.

Location: 01.

74.123

Tom, Craig; Miller, Lee D.; **Review of computer-based resource information systems**, 2, (series: Land use planning information report), (Colorado State University) 1974, Dec..

Abstract: Describes five categories of resource information systems with examples of specific systems.

Location: 05.

74.124

Turinetti, James D.; Mintzer, Olin W.; **Low-cost computerized land-use classification**, (in: Photogrammetic engineering, Vol.40, no.4) 974, Apr. pp.479-488.

Abstract: A low cost computerized analysis approach is investigated to identify general land use classifications from a number of multi-format. Non-registered, multispectral images. The image densities for selected known land use classes were processed through a fortran program and used as a model for identifying sample targets of known land use classes. The evaluation was performed twice. This made it possible to discriminate among soil, vegetation, and water based only on image densities. The test area was located in a selected area of cameron parish in southwestern Louisiana.

Location: 10,20,21,23,28,32,36.

74.125

United States. Department of Agriculture. Forestry Service. **Analysis of computer support systems for multifunctional planning**, PB-278 434, 2, (series: Analysis of computer support systems for multifunctional planning), (United States. Department of Agriculture. Forestry Service) 1974, July.

Abstract: Evaluates the U.S.F.S. resource information systems for planning applications in forestry in terms of utility, system compatibility, and economics.

Location: 10.

74.126

UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. TOPOGRAPHIC DIVISION. **Research and development in topographic mapping**, PB-232 451/5, USGS-TD-74-001, (United States Geological Survey) 1974, Apr..

Abstract: The annual report, covering the 12-month period ending in April 1974, summarizes the research and development activities of the U.S. Geological Survey, Topographic Division in the Office of Research and Technical Standards and in the Region offices at Arlington, Va., Rolla, Mo., Denver, Colo., and Menlo Park, Calif. The R and D projects mentioned concern the fields of cartography, field surveys, photogrammetry, orthophotomapping, and space technology. Articles by Division personnel prepared for presentation at meetings and conferences or for publication in professional journals and the Manual of Topographic Instructions are also listed.

74.127

Washam, J.P.; **Land use planning information: Basic considerations**, 63, (in: Council of Planning Librarians Librarians exchange bibliography,) (Council of Planning Librarians) 1974.

Location: 01.

74.128

Wehling, Roger A.; **Land use information system**, (City of Tampa. Metropolitan Development Agency) 1974, Sept..

Abstract: One of a series of documents pertaining to the development of an automated land use information system for the city of Tampa.

74.129

Weinstock, D.; Wilson, B.G.; Nicholas, J.F.; Brotchie, J.F.; **Property transactions in Victoria, 1967 to 1972**, (at: Proceedings of the 1st Australian Conference on Urban and Regional Planning Information Systems) 1974 pp.3.01-3.18.

Abstract: Details of all land transactions in Victoria from late 1967 onwards have been made available by the valuer-general of Victoria to the Division of building research, CSIRO, for research puposes. This paper describes the nature of these data, their organization into an accessible data base, and some of the ways the base has been used. Some proposed uses are described and recommendations are made for overcoming difficulties that have appeared.

74.130

Werner, Pamela A.; **Chart 1, Geocoding systems summary. Chart 2, Generalized hierarchical relationship of various geocoding systems, Survey of national geocoding systems**, DOT-TSC-OST-74-26, (United States Department of Transportation) 1974.

Abstract: Includes two charts: a summary of geocoding systems with brief descriptions of the code structures, and a diagram of the hierarchy of the various geocoding systems.

Location: 01.

74.131

Werner, Pamela A.; Massachusetts Institute of Technology. Urban Systems Laboratory, Cambridge. **DOT National County Component Conventer File: Prospects, problems, feasibility. Final report Dec. 73 - Apr. 74,** PB-235 707/7SL,.

Abstract: A systematic review of factors affecting the feasibility of developing a county component geocoding converter file is made. A discussion of the staged evaluation of such a file is presented.

74.132

Werner, Pamela A.; Massachusetts Institute of Technology. Urban Systems Laboratory, Cambridge. **National geocoding,** (in: Annals of the Association of American Geographers, Vol.64, no.2) 1974 pp.310-317.

Location: 07,14,20,27,28,36.

74.133

Werner, Pamela A.; Massachusetts Institute of Technology. Urban Systems Laboratory, Cambridge. **Survey of national geocoding systems. Final report. Oct. 73-June 74,** PB-239 601/8ST,.

Abstract: The document describes major geocoding systems. It is organized into sections that categorize geocoding systems by type. Section 2 deals with systems that are primarily geopolitical in nature and provide general reference coding structures for administrative or other purposes. Section 3 includes those geocoding systems that reference either special significance locations or a combination of geopolitical, geostatistical and special significance locations. The geocoding systems in Section 4 include those that reference areas delineated according to special criteria, such as economic or postal distribution patterns. Finally, Section 5 discusses those systems based on grid networks.

74.134

Whitemore, D.R.E.; **Status of computerized files in the mineral data bank,** (series: Geological Survey Canada papers), (Geological Survey of Canada) 1974 pp.55-58.

74.135

Whitten, E.H. Timothy; Northwestern University. Department of Geological Sciences, Evanston, IL.. **Orthogonal-polynomial contoured trend-surface maps for irregularly-spaced data. Technical report,** AD/A-001 234/4SL, TR-2,.

Abstract: A FORTRAN 4 computer program for producing contoured trend-surface maps for irregularly-spaced data on the basis of the orthogonal-polynomical model is provided. The (z sup2)-array is computed to permit identification and mapping of the true trend.

74.136

Widmer, K.; Halasi-Kun, George J.; **Land oriented reference data system. Bulletin 74,** (New Jersey Geological Survey) 1974.

74.137

Wilcox, Luman E.; Estes, J.; Czarnecki, Walter; Defense Mapping Agency Aerospace Center, St. Louis Air Force Station, MO.. **Fully automated compilation of gravity and geophysical maps,** AD-785 838/4SL, DMAAC-TP-74-002,.

Abstract: A wide variety of gravity and geophysical maps can be produced by fully automated methods. The locations of gravity measurements, gravity anomaly values, gravity anomaly contours, continental outlines, title, legend, labels, and other data to be shown on the maps are computer generated, then drawn by automatic plotting equipment. This procedure is used to prepare charts showing the density and distribution of gravity data holdings, contoured gravity anomaly maps and other graphics needed for gravity data evaluation and mean anomaly prediction purposes, maps of gravity station elevations used as vertical control in topographic map compilation, and maps of glacial ice thickness for geophysical analysis.

74.138 Wilson, S.; Texas A&M University, TX.. **Land use resource inventory systems - Information paradigm**, (in: American journal of agricultural economics, Vol.56, no.5) 1974 pp.1200.
Location: 20,28,32.

74.139 Wood, Peter M.; Austin, D.M.; **CARTE: a thematic mapping programme**, LBL-3073, (Lawrence Berkeley Laboratory) 1974, July.

74.140 Youngmann, Carl E.; **Uses of holography in thematic cartography**, (at: Proceedings of the ACSM 34th Annual Meeting) 1974.

74.141 **Computer aid eyed for land records**, (in: Washington Post, Vol.1974 Mar.,) pp.A-8.
Abstract: Reports efforts of Fairfax County, Virginia to obtain federal funding for a proposed computerized land title record system.

74.142 Greer, E.B.; **Development and application of an on-line mini computer/stereoplotter system**, (in: South African journal of photogrammetry, Vol.1974, Sept.,).

74.143 **Energy Information Act**, (at: United States Senate Committee Int. Insular Affairs 93 Con. 2 Part 1 Serial 93-94).
Abstract: Transcripts of hearings held on the energy information act, which would require oil companies to disclose their proved reserves and production, to set up a system to collect and evaluate information about energy resources, and to provide the federal government with authority and expertise to make its own independent investigation and evaluation of resources. The bill would establish a US. energy information system in the Dept. of Commerce to make public energy information more useful through a computerized facility for its collection, comparison and analysis.

74.144 **Geographic information systems in hydrography and oceanography**, (in: Canadian Cartographer, Vol.11, no.2) 1974, Dec. pp.125-141.

74.145 **Symposium: Computerization of land title records**, (in: Cincinnati law review, Vol.43, no.3) 1974 pp.465-555.
Abstract: A series of four articles directed to the general question of whether computerization is a feasible solution to the costly, inefficient land title and land transfer system presently in use in the United States.

74.146

Cooke, Donald F.; National Technical Information Service. **ADMATCH adventures**, (series: Census use study), (U.S. Bureau of the Census) 1974.

Abstract: A comic strip presentation describing admatch, a software program for matching data files with reference files. Basic approach used is to match data with a street address to a geocode in a reference file, providing a common denominator (the geocode) with which data can be analyzed and displayed

74.147

National Technical Information Service. **Current methodologies for determining the spatial distribution of air polluting emissions**, PB-237 864, 1974, July.

Abstract: Current methodologies for determining the spatial distributions for mobile and stationary source emissions are described. Coordinating systems. For Geocoding polluting emissions, such as the California State plane coordinate system and the universal transverse mercator system, are examined and compared. Techniques for quantifying and disaggregating regional mobile source emissions to grid systems compatible with regional air quality models currently in use are dissused.

74.148

POLARIS. **Survey Task Force - Project no. 3 - Registrar's compiled plans**, (POLARIS. Toronto Land Titles Office) 1974, Jan. 19.

Location: 01.

74.149

POLARIS. **Survey Task Force - Project no. 4 - Conversion using existing map base in registry system**, (POLARIS. Toronto Land Titles Office) 1974, Feb. 27.

Location: 01.

74.150

POLARIS. **Survey Task Force - Project no. 7 - Phase 1 - Information gathering**, (POLARIS. Toronto Land Titles Office) 1974, Oct. 4.

Location: 01.

1975
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75.001

Aangeenbrug, Robert T.; Wilford-Brickwood, Judith M., ed.; Bertrand, Rene, ed.; Van Zuylen, Luke, ed.; University of Kansas. **Computer graphic editing urban maps: A topologic classification of urban polygon files,** (at: Automation in cartography International Cartographic Association Commission 3. Working Group. Oceanic Cartography. Technical Working Session) (International Cartographic Association) 1975 pp.1-9.

Abstract: Concerns virtual maps of urban areas and the use of DIME files.
Location: 06.

75.002

Aangeenbrug, Robert T.; Bomberger, Dorothy L., Ed.; **International Geocoding 1974 Colloquium Proceedings. St. Raphael, France. Apr. 22-26, 1974,** (University of Kansas. Institute for Social and Environmental Studies) 1975.

75.003

Alderman, Willis H.; Amoco Prod. Co., Denver, Co.. **Use of interactive computer graphics for oil and gas exploration,** (at: Proceedings of the 9th Annual Meeting of the Geosci. Inf. Society) (American Geological Institute) 1975 pp.76-82.

Abstract: Explains the capabilities and usage of a large computer data base for the interactive production of maps related to oil and gas exploration.

75.004

Alexander, Robert H.; Reed, Wallace E.; Lewis, John E.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **CARETS: a prototype regional environmental infomation system. Volume 7. Land use information and air quality planning. Final report,** E77-10018,.

Abstract: The author has identified the following significant results. The pilot air quality system provided data for updating information on the sources of point and area emissions of SO2 and particulate matter affecting the Norfolk-Portsmouth area of Virginia for 1971-72 winter and the annual 1972 period. During the 1971-72 winter, estimated SO2 amounts over an area with a SW-NE axis in the central in the central section of Norfolk exceeded both primary and secondary levels.

75.005

Alexander, Robert H.; Delan, R.; Hayden, B.P.; Vincent, C.L.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **CARETS: a prototype regional environmental information system. Volume 9. Store zone land use and land cover: Central Atlantic Regional Ecological Test Site. Final report,** E77-10019, pp.1975, Sept..

Abstract: The author has identified the following significant results. Analysis of the land use and land cover maps provides a stratification of the CARETS shore area into regions which have a similar environmental organization. Different elements of the landscape are altered less frequently moving inland. Near the beach, higher frequency of monitoring is needed than is needed in the inland areas, including the marsh and estuarine areas.

75.006

Almy, Richard R.; **Assessment mapping and parcel identification systems**, (in: Assessors journal, Vol.10,) 1975, Dec. pp.15-45.

Abstract: A general survey of alternative parcel identification systems and mapping programmes. Chiefly concerned with the description and analysis of existing parcel identification systems and mapping programmes in Canada and the United States, and it treats these systems largely in terms of the requirements for effective assessment administration. Refers briefly to some of the work that has been done in connection with general land information systems but is for the most part restricted to the specialized needs of assessing officers

75.007

American Appraisal Associates. **Community data base: Fact or fiction? - Georgia Coordinate Mapping Project**, (in: American Appraisal Associates technical services bulletin, Vol.3, no.1) 1975.

75.008

American Society of Planning Officials. Chicago, IL.. **Information/data handling requirements for selected state resource management programmes. Technical supporting report C**, PB-266 643/6ST,.

Abstract: Four state resource management programs are analyzed for program characteristics, information typically required by the programme information commonly in use in state management, and programme purpose. The examination shows that programme characteristics determine data needs, state laws rarely specify data needs, and programs are uniformly dependent on traditional information sources.

Location: 17.

75.009

Amidon, E.L.; Kavaliunas, John, ed.; United States. Forestry Service. Berkeley, CA.. **Land unit mapping with the Wildland Resource Information System**, (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.367-377.

Abstract: Discusses the Wildland Resource Information System (WRIS), a computerized system for storing and manipulating data about land areas. It can edit, retrieve, update, overlay, plot, calculate, and store spatial data. WRIS digitizes land units - termed polygons - in each layer of mapped information by a scanning method. The U.S. Forestry Service's California Region is using multistage sampling, and WRIS, for each of five national forests have layers of data. Some 300-500 maps are processed per year by a three-person staff using a high-speed batching computer terminal.

Location: 15.

75.010

Anda, B.; Wilford-Brickwood, Judith M., ed.; Bernard, Rene, ed.; Van Zuylen, Luke, ed.; International Institute for Serial Survey and Earth Sciences, Enschede, Netherlands. **Automatic hill shading using an automatic flatbed drafting machine with a standard photohead**, (at: Automation in cartography. International Cartographic Association. Commission 3 Working Group. Oceanic Cartography. Technical Working Session) (International Cartographic Association) 1975 pp.193-197.

Abstract: Describes a technique for relief shading to produce a continuous density image.

Location: 06.

75.011

Anderson, Delmar E.; Kavaliunas, John, ed.; CIA, Reston, VA.. **Analytical map for school locational planning**, (at: Auto Cart. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.457-468.

Abstract: Describes the use of analytical maps for showing the results of a model for school locational planning in Topeka, Kansas. Urban information systems can provide valuable inputs to the decision-making process. Toward this end a model, based on linear programming techniques, for the locational planning of schools is presented. The major problems addressed are residential area growth, fulfillment of desegregation requirements, and school attendance boundaries. A favorable response from school officials resulted from the analysis and interpretation of maps produced from the findings of this model.

Location: 15.

75.012

Andersson, June; **Main characteristics of the land record system in Sweden**, (at: Proceedings of the Conference on MOLDS) (North American Institute for Modernization of Land Data Systems) 1975 pp.151-180.

Abstract: In Sweden development is going on to create an EDP based information system containing data on property units. The system will primarily serve the property and land register authorities but will also serve organizations dealing with urban and regional planning. A land data bank system is developed and implemented and will replace the manual register system in one county during 1975. Land data bank system is an on-line system with a central computer and connected visual displays and printers. It is possible for banks and other organizations to connect terminals to the system

75.013

Atkey, Col. R.G.; Gibson, Capt. R.J.; **Progress in automated cartography**, (at: Conference of Commonwealth Survey Officers) 1975.

75.014

Austin, D.M.; Krang, S.G.; Quong, C.; University of California. Lawrence Berkeley Laboratory. **Overview of the LBL Socio Economic Environmental Demographic Information Systems (SEEDIS)**, LBL-3699,.

Abstract: A Socio-Economic Environmental Demographic Information Systems (SEEDIS) was developed by the Mathematics and Computing Group of Lawrence Berkeley Laboratory. This paper indicates the philosophy and motivation which led to the development of SEEDIS and briefly describes each of its component projects. Appendices include a listing of LBL's current data bases, descriptions and sample formats of reports prepared for the manpower indicator programme and a description of and examples of maps generated utilizing the LBL computer mapping system.

75.015

Ayers, Eunice; **Where do we go from here?**, (at: Proceedings of the conference on MOLDS) (North American Institute for Modernization of Land Data Systems) 1975 pp.439-446.

Abstract: Reviews current activities to improve land records in Forsyth County, North Carolina, and discusses the future demands that will be levied on the system by both public and local government users. By implication, these user requirements define the required progress in the preservation and improvements in land records so urgently needed.

75.016

Bain, John; **Planning data study: Sault Ste. Marie Area Planning Board,** (Sault Ste. Marie. Planning Board) 1975.
Location: 01.

75.017

Barabba, Vincent P.; Kavaliunas, John, ed.; United States. Bureau of the Census. Geography Division. Washington, D.C.. **Challenge to cartographers,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.15-26.

Abstract: Discusses the theory behind innovations and the attributes which determine adoption rate of innovations and relates this to the slow acceptance of fully automated graphic systems. Also expresses the need for guidelines in graphics which would enable people to be taught to understand and use graphic representations.

Location: 15.

75.018

Barb, Charles E., Jr.; Kavaliunas, John, ed.; University of Oklahoma. School of Civil Engineering and Department of Geography, Norman, O.K.. **Congruence between U.S. Census DIME technology and observed local operating agency geographic interests and needs,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.499-504.

Abstract: Describes principal concepts and determinants in the evolution of DIME technology and compares current technology with observed interests and needs of municipal operating agencies. This technology, as originally developed by the U.S. Census Bureau, is of marginal quality and much time, effort and expense is necessary to operationalize the GBF/DIME Files for particular needs. Concludes that there is only limited congrivence between DIME technology and local agency interests and needs.

Location: 15.

75.019

Barb, Charles E., Jr.; University of Washington. Urban Systems Research Center, Seattle, WA.. **Geo-utility: An alternative for local organization of geoprocessing technology,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.281-294.

Abstract: A recent appraisal of current local adaptation of automated street address geoprocessing technology suggests that there are some fundamental problems in translating the much publicized potentials of automated geoprocessing (as embodied in Census DIME files) into ongoing local applications of the technology. Contrary to Census Bureau body counts of areas embarked upon the CUE Program, real local adaptation of the technology has proven to be remarkably slow and pockmarked with numerous failures.

Location: 07.

75.020

Barr, MacDonald; Massachusetts Land Records Commission, Boston. **Demonstration of a current land data system based on recordation of ownership of parcels,.**

75.021

Barr, MacDonald; **Land data files: How much integration?,** (at: Annual meeting of the Canadian Institute of Surveying) 1975.

75.022

Barwinski, Klaus; **Modern cadastre in a highly developed county**, (at: Proceedings of North American Conference on Modernization of Land Data Systems) (North American Institute for Modernization of Land Data Systems) 1975.

75.023

Bathke, William L.; **Basic elements in the planning of a new land record system**, (at: Proceedings of North American Conference on MOLDS) (North American Institute for Modernization of Land Data Systems) 1975 pp.257-278.

Abstract: The best source of current resources data is to be found in automated data processing applications, united through the use of a geographic data base. This data base is created from aerial photographs and maps tied to a rigid control network. Data relating to these maps and photographs, when used in conjunction with specialized computer programs, serves as the foundation for the generation of computer-prepared maps, the identification of all data related to a given location, line and land parcel, region, and as an evolving data base for individual computer applications required by the functions of various agencies in the public and private sections.

75.024

Batson, R.M.; Edwards, Kathleen; Eliason, E.M.; **Computer-generated shaded relief images**, (in: Journal of research of the United States Geological Survey, Vol.3, no.4) 1975, July - Aug. pp.401-408.

Abstract: Digital image-processing techniques have been developed to make shaded-relief images from digitized topographic data. The resulting images have at least two advantages over aerial photographs: 1) the images are true map projections containing no relief-induced distortion, and 2) tonal variation is unambiguously identified with relief, rather than with snow, vegetation, or other albedo variations. Parallax can be introduced into these maps in the computer, and stereoscopic pairs can thus be created.

Location: 05,10,20,21,27,33,36.

75.025

Batson, R.M.; Kavaliunas, John, ed.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Multi-dimensional maps through digital image processing**, (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartograph) (American Congress on Surveying and Mapping) 1975 pp.386-387.

Abstract: Image processing techniques originally developed for exploring the planets can be applied to any data set in which "brightness" values can be arranged in a television-like raster of rows and columns. Data sets may consist of actual television pictures like those taken by LANDSAT, matrices of terrain elevation, or parameters of land use, or a variety of geological and geophysical information. Color compositing, introduction of steroscopic parallax, and "relief" shading can be used to show each data set in a distinctive way within a single composite map image.

Location: 15.

75.026

Behrens, John O.; Kavaliunas, John, ed.; United States. Bureau of the Census. Geography Division. Washington, D.C.. **Tax maps and their land use implications**, (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.381-385.

Abstract: Describes the essential and optimal features on cadastral maps used by assessors for tax purposes. In the United States, assessors' records collectively represent the most complete inventory of land parcels, even though sometimes limited to the taxable. Because they are basic and complete, they lend themselves to integration with a comprehensive land data system sensitive to the needs of officials other than assessors, and to the needs of the general public.

Location: 15.

75.027

Bell, S.B.M.; Bickmore, D.P.; Kavaliunas, John, ed.; Experimental Cartography Unit. Natural Environment Research Council of Great Britain, London, ENgland. **Interactive cartography at ECU: Regional geography a la mode,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.303-317.

Abstract: Describes the Experimental Cartography Unit of the NERC, its purpose, and the system's hardware and software with emphasis upon the ECU's interactive facilities.

Location: 15.

75.028

Ben-Moshe, Ram; Bunkev, James; Moinester, Philip; University of California. School of Architecture and Urban Planning. **Intuval '75: An interactive computer graphics planning and design tool,**.

Abstract: Describes an interactive cartographic system for use in urban planning.

Location: 20.

75.029

Berner, H.; Ekstrom, T.; Lilljequist, R.; Stephansson, O.; Wikstrom, A.; Hutchison, W.W.; COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **GEOMAP, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada paper), (Canada. Geological Survey) 1975 pp.8-18.

Abstract: Concerns GEOMAP, a storage and retrieval system for geological data, and describes its updating and data retrieval procedures. Discusses experiences with GEOMAP.

Location: 10.

75.030

Blackie, W.V. ed.; Canada. Department of Energy, Mines and Resources. Surveys and Mapping Branch. **Ottawa Conference on Concepts of a Modern Cadastre,** (in: Canadian Surveyor,) (MOLDS).

Abstract: Describes a two day conference on modern cadastres, set up in preparation for the MOLDS conference and to assist in developing modern land information systems in Canada, arranged by the Canadian Institute of Surveying. Speakers from several countries with working cadastral systems described their operations and dealt with most of the significant basic concepts of a cadastre.

Location: 01.

75.031

Bleaney, J.H.; Borough of North York. Public Works Department. Engineering Division, Toronto, Ont.. **Geographic data for engineering purposes,** (in: Canadian surveyor, Vol.29., no.1) (at: Concepts of modern castre) 1975, Mar. pp.104-113.

Abstract: Discusses a mapping programme in North York which is part of an urban information system. Considers user needs, geographical location identifiers and data retrieval.

Location: 01.

75.032

Van de Velde, Louis R.; IBM Federal Systems Division, Gathersburg, MD.. **Developing a computerized impact zoning system,** (at: Urban and regional information systems: Resources and results. Volume 2. Twelfth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.340-352.

Abstract: Addresses itself to one form of geocoded data base and other design parameters of an impact zoning system, based largely on design planning preceding development of the Broward County, Florida Broward Impact Zoning System (BIZS).

Location: 01,07.

75.033

Bossler, John D.; Stem, James E.; **Map projection for use in a land records system**, (at: Proceedings of the conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute for Modernization of Land Data Systems) 1975 pp.123-150.

Abstract: The fact that a point on the earth may be associated with more than one plane coordinate pair, primarily because its computation was based on a different geodetic datum, or the system, is discussed. Once the datum and projection are defined, knowledge of the distortions associated with representing the curved earth on a plane is needed before the coordinates are used. The authors have attempted to simplify certain concepts associated with distortions, and present them here. Discusses the problems associated with utilizing a coordinate system for a cadastre. Several recommendations are given.

75.034

Botbol, Joseph Moses; Bowen, Roger W.; Hutchison, W.W.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **Geologic Retrieval and Storage Program (GRASP), Computer-based systems for geological field data: An international state-of-the-art review for 1973**, (series: Geological Survey Canada paper), (Canada. Geological Survey) 1975 pp.89-93.

Abstract: Provides a brief sysem description of GRASP, a system for geological data processing.

Location: 10.

75.035

Boyle, A. Raymond; **Present status of automated cartography**, (in: Computer graphics, Vol.9, no.1) (at: Proceedings of the Second Annual Conference of Computer Graphics and Interactive Techniques - SIGGRAPH '75) 1975, Spring pp.260-266.

Location: 28.

75.036

Boyle, A. Raymond; Kavaliunas, John, ed.; University of Saskatchewan. Department of Electrical Engineering, Saskatoon, Sask.. **Small automated cartographic systems**, (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.298-302.

Abstract: State and local governments, governmental agencies and similar authorities considering converting their cartographic operations from manual to automated procedures must give consideration to the financial commitment required and to the component entities of a cartographic system. Discusses the work of the Graphics Systems Design and Application Group at the University of Saskatchewan, which has been involved in developments in automated cartographic systems utilizing available hardware and software.

Location: 15.

75.037

Braasch, H.W.; Cadastral Surveying Office, West Germany Eimsbuttel/Hamburg, West Germany. **Arrangement of numerical cadastral data in a modern cadastre of land holding**, (in: Canadian surveyor, Vol.29, no.1) (at: Concepts of modern cadastre) 1975, Mar. pp.39-48.

Abstract: Defines and describes the essential features of a modern cadastre. Discusses four forms of cadastres: graphical, numerical, coordinate and computational, and considers their application in an automated cadastral system.

Location: 01.

75.038

Brandon, S.E.; Dumanski, J.; Kloosteroran, B.; Wilford-Brickwood, Judith M., ed.; Bertrand, Rene, ed.; Van Zuylen, Luke, ed.; **Review of the cartographic file of the Canada Soil Information System (CANSIS)**, (at: Automation in cartography. International cartographic Association Commission 3 Working Group. Oceanic Cartography, Technical Working Session) (International Cartographic Association) 1975 pp.10-16.

Abstract: Outlines CANSIS and emphasizes the work done by its cartography unit using automated mapping procedures

Location: 06.

75.039

Brassel, Kurt E.; Kavaliunas, John, ed.; State University of New York at Buffalo. Department of Geography. **Neighborhood computation for large sets of data points**, (at: Auto Cart 2, Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.337-345.

Abstract: Explains an algorithm for the generation of a geographic base file for information pertinent to point locations (data points). Given the locations of the data points, the algorithm generates area delineations which are based on a Thiessen polygon approach. The Thiessen polygons are then used to build up a data structure describing the neighborhood relationships of the set of data points. In this algorithm the Thiessen neighbors are searched for among points in a certain neighborhood of the centroid only. This search, therefore, is essentially local and allows for efficient processing of larger sets of data points.

Location: 15.

75.040

Broome, Frederick R.; Kavaliunas, John, ed.; United States. Bureau of the census. Geography Division. Washington, D.C.. **Automated cartography at the U.S. Bureau of the Census**, (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping.) 1975 pp.123-125.

Abstract: Discusses automated cartography at Census as it pertains to two basic needs - operational requirements and data presentation. The GBF/DIME Project is an example of the first, the Urban Atlas Series is an example of the second. Quality control of existing data, speed and costs are reasons for automating cartography at the Bureau of the Census

Location: 15.

75.041

Brown, E.G.; Calgary Power Ltd. Division of Land Management. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. **To the Users Conference on Provincial Co-ordinates**, (at: User's Conference on Provincial Coordinates) pp.65-67.

Abstract: Describes Calgary Power's use of ERCB accurate and up-to-date pipeline location records and emphasizes the need for a broader and more refined system of up-to-date land information.

Location: 01.

75.042

Bryant, Nevin A.; **MILUS (Multiple Input Land Use System)**, (Jet Propulsion Laboratory) 1975, Nov..

Abstract: Describes MILUS ,a more sophisticated companion to the operational land use management information system (LUMIS). LUMIS is designed as a general information handling system, but its primary applications will be in land use, resource inventory, and modeling and forecasting.

75.043

Bunce, R.G.H.; Morrell, S.K.; Stel, H.E.; Institute of Terrestrial Ecology. United Kingdom. **Application of multivariate analysis to regional survey,** (in: Journal of environmental management, Vol.3, no.3) 1975, July pp.151.

Abstract: The application of multivariate methods to map data is examined to produce classifications of grid squares that will provide a basis for field sampling and a useful land classification. The multivariate approach is tried in a small area, the Grizedale Forest, U.K., and in the whole of the Central Lake District, U.K. Use of squares, although valuable as a reference system and for computer mapping, involves difficulties in boundary definition.

Location: 20,28.

75.044

Burk, C.F., Jr.; Gunn, K.L.; **Canadian index to geoscience data: History and status to 1975,** (at: Third Open Conference on Information Science in Canada. Canadian Association for Information Science).

75.045

Calkins, James A.; Deiter, L.C.; **Uses of CRIB - a GIPSY formatted mineral resources data file,** Vol.5, (series: Geoscience Information Society Proceedings), 1975 pp.1-40.

Location: 27,28.

75.046

Campbell, William A.; **Modernization of land records system in North Carolina,** (at: Proceedings of the Conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute for Modernization of Land Data Systems) 1975 pp.181-190.

Abstract: Land records systems in North Carolina are primarily a function of local government. Partly as a consequence of several local records offices operating without regulation from a central state records office, lack of uniformity from county to county is a serious problem. Compounding this problem are use of name indexes, lack of automated data processing, and an increase in the number and variey of land records. Two counties, Mecklenburg and Forsyth have instituted modernization programs based upon parcel numbers and computerization of land information. Several legislative proposals are now before the North Carolina general assembly to modernize land records systems.

75.047

Carbaugh, Larry W.; Kavaliunas, John, ed.; United States. Bureau of the Census. Geography Division. Washington, D.C.. **Data files for computerized cartography from the U.S. Census Bureau,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.335-336.

Abstract: Since 1970 the U.S. Bureau of the Census has developed and made available for purchase a variety of computer products including computer programmes, geographic coordinate files and data summaries for geographic areas, designed for use in automated cartography. The dissemination of these products has, however, obligated the Bureau to provide some measure of support either in terms of software consultation on the distribution of correction update material. This fact, combined with the differences in computer hardware and the increase in the number of data files, has added to the complexity of the dissemination problem.

Location: 15.

75.048

Carlberg, Edward F.; Boeing Computer Services, Incorporated. Seattle, WA.. **Unimatch experience with truck survey data,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.61-77.

Abstract: Explains how collected information from a questionnaire-oriented survey of the flow of commodities on the nation's highways, truck configuration and usages was geocoded by using a subset of UNIMATCH against a combined GACI and SPLC reference file containing 103,000 place names.

Location: 07.

75.049

Carlson, Gerow M.; **New York State real property valuation system,** (New York State. Board of Equalization and Assessment) 1975, Mar..

Abstract: The real property valuation system described is part of an integrated computerized system of assessment administration known as the New York State real property information system (NYSRPIS). The system is composed of seven modules. The system is designed to be fully integrated, but the individual modules can be separately installed and operated. Only modules III, Market monitoring and module IV. value estimation, are discussed.

75.050

Chan, F. Kenneth; O'Neill, E.M.; Computer Sciences Corporation. System Sciences Division, Silver Spring, MD.. **Feasibility study of a quadrilateralized spherical cube earth data base. Final report May 1974 - March 1975,** AD-A010 232/7ST, CSC/TR-75/6007, (Computer Sciences Corporation) 1975, Apr. 14.

Abstract: This report describes the results of research into the feasibility of storing satellite meteorological data in a high-resolution, equal-area, computer-accessible data base. Equal area elements are stored in square arrays representing the faces of a cube inscribed within the Earth. The required area-preserving transformation is presented along with its inverse. A unique array-mapping scheme is presented, which preserves near-neighbor relations and allows rapid index computation. The implementation of this data base on rotational storage devices is discussed, and calculated execution times are presented.

75.051

Chatterton, William A.; McLaughlin, John; **Toward the development of modern cadastral standards,** (at: Proceedings of the Conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute for Modernization of Land Data Systems) 1975 pp.69-94.

Abstract: Presents a preliminary report of the ad hoc commitee of the real property division, section on real property, probate and trust law, american bar association and the committee on improvement of land records, American Congress on Surveying and Mapping of recommended standards for land surveying, mapping and photogrammetry. It is contemplated that before a final version is published the committee will meet again to receive further comments and input.

75.052

Christ, Fred; Wilford-Brickwood, Judith M., ed.; Bernard, Rene, ed.; Van Zuylen, Luke, ed.; **Automatically symbolized output of map data compiled and selected from a data base,** (at: Automation in cartography. International Cartographic Association. Commission 3 Working Group. Oceanic Cartography Technical Working Session) (ICA) 1975 pp.227-239.

Abstract: Describes interactive compilation and selection of mapping data for the productiion of topographic maps in the IFAG cartographic system. Also explains automatic symbolization.

Location: 06.

75.053

City of Calgary. **Information pak,** (City of Calgary. Planning Department) 1975. **Location:** 01.

75.054

City of Charlotte, N.C. USAC Project. **City of Charlotte USAC Project: Task 3 completion report. Final,** PB-245 894/1ST, USAC-CNCO-0201, MIS-3401/000/00,.

Abstract: The report is from a USAC series produced by the city of Charlotte, covering activities from systems analysis through implementation and evaluation of urban information systems. The Task 3 Completion Report on designated public services provided a listing of all deliverable documentation associated with the Task 3 design effort. It also contains a brief description of each module designed and the data acquisition plan for each file that supports the module design.

75.055

City of Charlotte, N.C. USAC Project. **Geographic data index maintenance module computer program descriptions,** PB-241 618/8ST, USAC-CNCO-0180, MIS-4302/007/01,.

Abstract: The report is from a USAC series produced by the city of Charlotte. It describes the entire computer programme set for the Geographic Data Index Maintenance Module within the Charlotte IMIS system. Information is provided in sufficient detail to accommodate the transfer of responsibility for programme adaption, error checking, and modification from the original developers to other parties. Also included is an indication of the tasks implemented by the programmes set described in the document. This document describes the operational roles and interrelationships of the computer programmes which support the initially implemented module capabilities. Included is a complete and detailed description of each computer programme (excluding vendor supplied system software) used in module operations.

75.056

City of Los Angeles. Department of City Planning. **Introduction to the City of Los Angeles Land Use Planning and Management Subsystem (LUPAMS). Final report,** PB-258 650/1ST, PRPRSE-590,.

Abstract: This report describes, in general, the design concept of the Land Use Planning and Management Subsystem (LUPAMS). LUPAMS is part of a large city of Los Angeles computerized information system called the Los Angeles Municipal Information System. LUPAMS is an automated parcel information system, which will have the capability of retrieving information about a particular parcel of land in the city. City departments will be able to analyse and make decisions based on the information provided by LUPAMS, thus saving countless man-hours of field trips and research work.

75.057

City of Reading, PA. USAC Project. **Programme specifications of the geographic base maintenance module,** PB-247 674/5ST, USAC-RPA2-4042,.

Abstract: The report is from a USAC series produced by the city of Reading covering activities from the systems analysis through implementation and evaluation of urban information systems. The first section briefly describes Reading, USAC, and the goals set for the Physical and Economic Development Subsystem (PEDS). It further establishes a background for understanding how this particular module fits into the PEDS. Section two is a detailed description of each programme within the geographic base maintenance module. Inputs, outputs, and processing requirements are defined for each programme record layouts and card layouts are contained in the appendices. This document serves as a guide for the geographic base maintenance programmer.

75.058

City of Wichita Falls, TX.. **City of Wichita Falls USAC Project: Geographic base index system (GBIS) update applications completion, report,** PB-243-307,.

75.059

Coleman, Derek J.; Ecologistics Limited, Kitchener, Ont.. **Application of a data bank with computer graphic capabilities in regional environmental planning,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.381-386.

Abstract: Discusses the characteristics of information requirements in regional environmental planning. Suggests that many of the requirements can be satisfied through computer information systems.

Location: 07.

75.060

Collins, Stanley H.; University of Guelph. School of Engineering. **Terrain parameters directly from a digital terrain model,** (in: Canadian surveyor, Vol.29, no.5) 1975, Dec. pp.507-518.

Abstract: A computer algorithm is developed to yield quantitative terrain data and to select special features for computer mapping. Values of depression storage, watershed area and earthwork volumes are deduced directly from a digital terrain model without interpolation or surface fitting. For map production, the algorithm signalizes contour points, watershed boundard points, stream points and storage crest points by a direct sorting process without assumption of continuity. The algorithm suggests a new approach to the use of DTMs in which all information is selected by the computer directly from the raw data, and points out new ways of defining physical features so that they can be quantified by fast sorting methods.

Location: 01,10,20,21,28.

75.061

Cook, Henry R.; Defense Mapping Agency Topographic Center, Washington D.C.. **Digital Topographic Information Bank,** (at: Proceedings of the American Congress on Surveying and Mapping Fall Convention (Technical papers)) (American Congress on Surveying and Mapping) 1975 pp.144-166.

Abstract: Reviews the current (1975) status of the DTIB its file structures and data output formats, as well as problem areas, possible solutions, applications and future trends of the Digital Topographic Information Bank.

Location: 05.

75.062

Coppock, J.T.; Davis, John C., ed.; McCullagh, Michael J., ed.; University of Edinburgh. Department of Geography. University of Kansas. NATO Advanced Study Institute. **Maps by line printer, Display and analysis of spatial data,** 0-471-19915-X, (John Wiley and Sons) 1975 pp.137-154.

Abstract: Considers the use of line printers for automated mapping with emphasis on the production of thematic maps. Describes data display characteristics with respect to economics, production speed, aesthetic qualities, and mapping symbology capabilities.

Location: 07.

75.063

Corbett, James P.; Kavaliunas, John, ed.; United States. Statistical Research Division. Washington, D.C.. **Topological principles in cartography,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.61-65.

Abstract: Sets forth the mathematical foundation for modern automated cartography, based on relevant parts of topology and graph theory. The generality and future value of this theory are also discussed.

Location: 15.

75.064

Cox, Lawrence H.; Kavaliunas, John, ed.; United States. Statistical Research Division. Washington, D.C.. **Applications of lattice theory to automated coding and decoding,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.519-522.

Abstract: Describes techniques and a computer system for examining the hierarchical relationships which exist between component subsets of the data sets, and for organizing, managing and accessing the data base. Defines data structures used by the U.S. Bureau of the Census for geocoded information.

Location: 15.

75.065

Crevo, Charles G.; Manning, Joseph M.; Urban transportation Systems Associates, Incorporated, Newton, MA.. **Development of a motor vehicle accident records system,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.50-60.

Abstract: The geographic location of motor vehicle accidents is a tedious and time-consuming task. The Rhode Island Department of Transportation undertook to transfer from manual procedure to an automated system. The basis for geocoding accident locations is an Intersection Reference File generated from a DIME File developed by Rhode Island in conjunction with the 1970 Decennial Census. The location described on the Motor Vehicle Accident Operator Report is matched to the Intersection Reference File and geocode information is added to each accident record in preparation for a report generating process.

Location: 07.

75.066

Davis, John C., Ed.; Kavaliunas, John, ed.; Kansas Geological Survey, Lawrence, K.S.. **Contouring algorithms,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartograahy) (American Congress of Survey and Mapping) 1975 pp.352-359.

Abstract: Computer programs for drawing isoline or contour maps from scattered data points can be categorized into three general groups: triangulation procedures, global fit procedures, and local fit methods. Computer algorithms for contouring spatial data differ in subtle ways that affect the appearance of the maps which they produce. If a contouring system is very flexible, many errors may be avoided by selecting the best combination of parameters and methods for a particular map and a specific objective. This requires, however, an evaluation of the performance of different mapping techniques under different conditions.

Location: 15.

75.067

Davis, John C., ed.; McCullagh, Michael J., ed.; University of Kansas. NATO Advanced Study Institute. **Display and analysis of spatial data,** (at: North Atlantic Treaty Organization. Advanced Study Institute on Display and Analysis of Spatial Data-papers) (John Wiley and Sons) 1975.

Abstract: A collection of twenty-two papers dealing primarily with automated mapping. Of particular concern are the problems in data definition, data collection, spatial displays and the construction of maps as well as those in analysis and interpretation of data display.

Location: 07.

75.068

DeGroff, William J.; City of Long Beach, CA. Information Services Division. **Physical and Economic Development Subsystem (PEDS),** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.216-233.

Abstract: Discusses the results of the first two years of research and development of the Physical and Economic Development Subsystem (PEDS) in the City of Long Beach and the capabilities which are now available. Describes PEDS as an integrated property information system which supports planning and management information requirements as well as the basic property related operation of the City.

Location: 07.

75.069

Dobner, Horst K.; **Basic elements in the planning of a new land record system,** (at: Proceedings of Conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute of Modernization of Land Data Systems) 1975 pp.239-256.

Abstract: Planning a new land record system means defining needs and their solutions, compiling and analyzing case backgrounds making rational decisions, and designing for speed, simplicity, economy, flexibility and precision. It is necessary to determine the general scope of the new system by analyzing existing and potential systems, local circumstances needs, policies and programs as well as the type of data to be handled. This land record system project includes boundary and parcel descriptions, fiscal considerations, the detailed system design, and the structural organization and functions of the agency in charge of carrying out a detailed work plan. Public opinion and budget and financing are important elements to be taken into account.

75.070

Dobos, Nick E.; **Snohomish County Land Use Inventory and Development Monitoring System,** (at: 1975 URISA proceedings, Vol. 2) (Urban and Regional Information Systems Association) 1975, Aug. pp.193-204.

Abstract: Examines a land use inventory system using an automated building permits system and a computerized land parcel file. Contrasts the land use nature of a parcel file to the land cover orientation of landsat remote sensing imagery. Because the issuance of building permits and property valuation by field assessment are both continuous county functions, the inventory is self-maintaining and additional field checking is avoided.

75.071

Domsch, Ronald E.; Mai, Kenneth D.; Kavaliunas, John, ed.; Wyandotte County Base Mapping Program, Kansas City, KS.. **Computer mapping and its impact on Kansas City, Kansas and Wyandotte County,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.469-481.

Abstract: Focuses on various forms (choropleth, dot and street) of mapping in Kansas City through use of GBF/DIME file. Rather than suggesting the use of a massive, all-purpose programme, emphasis is directed on small modular programmes linked with different operational files. Some of the uses of urban mapping include a street sign inventory for highway safety, various population distributions, and street maps for repair bids.

Location: 15.

75.072

Du, Kwen M.; House, Louis O.; Meadows, John, ed.; Bare, Bruce, ed.; Ware, Kenneth, ed.; Row, Clark, ed.; Great Northern Nekoosa, Corporatin, Stamford, CT.. **Integrated Woodlands Information and Planning System,** (at: Systems analysis and forest resource management. Proceedings of a workshop, Systems analysis working group. Society of American Foresters) (Society of American Foresters) 1975 pp.427-432.

Abstract: Provides a system description of WIPS, a modular system for planning applications in forestry.

Location: 10.

75.073
Dueker, Kenneth J.; **Geographic data encoding issues**, 43, (series: Draft technical reports), (University of Iowa. Institute of Urban and Regional Research) 1975, Apr..

75.074
Dueker, Kenneth J.; Talcott, Richard L.; Goodchild, M.F.; Milligan, John; **Land Resource Information System: A development and demonstration for the State of Iowa. Final report 2**, (University of Iowa. Institute of Urban and Regional Research) 1975.

75.075
Dueker, Kenneth J.; **Spatial data information systems: A chronology, Issue papers - Technical report** E, 3, (U.S. Department of the Interior and the U.S. Geological Survey) 1975.

75.076
Dueker, Kenneth J.; Talcott, Richard L.; **State land use planning process issues: Geographic information system implications**, (University of Iowa. Institute of Urban and Regional Research) 1975.

75.077
Dumanski, J.; Kloosterman, Bruce; Brandon, S.E.; **Concepts, objectives and structure of the Canada Soil Information Systems**, (in: Canadian journal of soil science, Vol.55,) 1975, May pp.181-187.
Location: 10,05,20,21,27,28,32,35,36.

75.078
Dunham, Allison; **Organization structure of a land records system**, (at: Proceedings of the Conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute for Modernization of Land Data System) 1975 pp.401-410.
Abstract: While boundaries are important questions in any new development and subdivisions of land, over time the more important questions are the fragmentations of owner ship without boundary changes. A de-emphasis of concern about boundaries permits data about interests to be stored and aggregated much less precisely than that of laying boundaries out on the ground. It is not necessary for this purpose to have precise boundary information.

75.079
Easton, Cam H.; **Land records systems in Forsyth County, N.C., International property assessment administration Volume** 7, (International Association of Assessing Officers) 1975 pp.261-267.

75.080
Eberhart, Russell C.; Johns Hopkins University, Baltimore, MD.. **Chesapeake Bay Research and Management Shoreline Data Bank**, (at: IEEE Conference on Eng. in the Ocean Environ. and Mar. Technol. Soc. 11th Annual Meeting Proceedings) (IEEE) 1975 pp.423-427.
Abstract: Describes the RAMS Data Bank for resource data required in environmental planning applications and discusses the data bank's data display capabilities.

75.081

Dean, Edson T.; Kavaliunas, John, ed.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. TOPOGRAPHIC DIVISION. **Digital Cartographic Data Base,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted cartography) (American Congress on Survey and Mapping) 1975 pp.523-538.

Abstract: U.S. Geological Survey Topographic Division in Menlo Park, California is in the process of examining and redefining the mapping program for which the organization is responsible in order to better serve the country's needs for basic cartographic data. It is anticipated that in addition to the need for a family of general-purpose maps, which USGS will continue to produce, there will be a growing requirement that such material be presented in digital form. It is intended that the National Mapping Program will provide cartographic information in graphic and digital form to the extent needed. Deals with a cartographic data base which is specifically structured for this purpose.

Location: 15.

75.082

Fabbri, Andrea G.; Divi, S.R.; Wong, A.S.; **Data base for mineral potential estimation in the Appalachian region of Canada,** 75-1. Pt. C, (series: Geological Survey Canada papers), (Geological Survey of Canada) 1975 pp.123-132.

75.083

Fabbri, Andrea G.; Geological Survey of Canada, Ottawa, Ont.. **Design and structure of geological data banks for regional mineral potential evaluation,** (in: Canadian Mining and Metallurgical Bulletin, Vol.68, no.760) 1975, Aug. pp.91-98.

Abstract: Describes the methods used for quantification of the geological variables, the structure of the computer files and the use that can be made of them. A data bank for the Superior Province of the Canadian Shield is discussed in more detail to exemplify the approach. Data can be extracted selectively from this bank in order to provide summary statistics, histograms, maps for areal distribution patterns of single parameters or secondary files for specific geomathematical studies. Several examples of results are presented.

Location: 02,10,24.

75.084

Faig, Wolfgang; Masry, Salem E.; **Development of a system for flood risk mapping using photogrammetry and electronic digital data processing,** (Canada. Department of the Environment. Inland Waters Directorate) 1975.

75.085

Farnsworth, George L.; Kavaliunas, John, ed.; University of Southern California. Social Science Research Institute, Arlington, VA.. **ZIPSTAN Standardization System,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.496-498.

Abstract: Discusses the ZIPSTAN Standardization System, a computer methodology for standardizing street addresses to facilitate retrieval of geographic coordinates from geographic base files for mapping purposes. One reason computer-assisted cartography is not extensively employed in urban information systems is the problem of data preparation. One approach to the problem is the ZIPSTAN program which converts many variations in street addresses to a standard format. The system is available from the Bureau of the Census at a nominal cost.

Location: 15.

75.086

Feeser, Larry J.; Ewald, Robert H.; Rensselaer Polytechnic Institute. Computer Research Laboratory, Troy, N.Y.. **Computer graphics and public hearings,** (in: Transportation Research Board-Research record, no.553) 1975 pp.22-29.

Abstract: Discusses how computer-generated graphic displays can be used by transportation agencies to inform the public about certain aspects of a project before, during, and after a public hearing, including mapping, land use plots, perspective views of facilities, origin and destination study plots, and environmental study plots.

Location: 09,20.

75.087

Fialho, Jose Kleber; Kavaliunas, John, ed.; Brazilian Institute of Geography and Statistics, Rio de Janeiro, Brazil. **Brazilian cartography,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.556-569.

Abstract: Explains the components of the Brazilian cartographic system, its activities and products, and describes the software developed to support automated cartography in that country.

Location: 15.

75.088

Filler, Joel; Metro Data Processing Department, Nashville, Tennessee. **LAMP: Metropolitan Nashville's Location and Mapping Program,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.397-405.

Abstract: Discusses the development of LAMP, Metropolitan Nashville's Location and Mapping Program which involves location-related information processing

Location: 07.

75.089

Flemming, Neil L.; **Continuous updating: An essential requirement of a modern cadastre,** (in: Canadian surveyor, Vol.29, no.1) 1975, Mar. pp.64-74.

Abstract: Deals with the updating of modern multipurpose cadastre, based on experience with the Maritime Land Registration and Information Service. Continuous updating is discussed under each of the four essential phases of cadastre: Phase 1, control surveys, Phase 2, base mapping at large and medium scales, Phase 3, the property ownership file and related property maps, and Phase 4, other land related information files. The organization of an agency to coordinate the gathering, assimilation, updating and retrieval of other land information is reviewed with respect to developments in Prince Edward Island.

Location: 10,20,21,28.

75.090

Foley, Maurice E.; Raytheon Company. Autometric Operations, Wayland, MA.. **Cartography for the computer,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urband and Regional Information Systems Association) 1975 pp.368-380.

Abstract: Raytheon/Autometric's recent experiences of editing and converting several hundred analog maps into a digital data base for the U.S. Department of the Interior pilot Natural Resource Information System is reviewed. Based upon this experience, the logic required of maps for machine readibility is reviewed as it imparts upon analog-to-digital map conversion. Five common cartographic weaknesses are defined and discussed in terms of their negative effects on the conversion process and the resultant digital map file. Remedial cartographic procedures are recommended.

Location: 07.

75.091

Forsyth County, Winston-Salem, N.C.. **Local government efficiency review,.**

Abstract: A detailed report on an extensive review (by a non-government study committee) of the efficiency of operation of the governments of Forsyth County and the city of Winston-Salem, N.C. includes discussion of departments related to land information systems including, data processing, property tax, register of deeds, and the comprehensive land record information system.

75.092

Frazier, Bruce E.; Lee, Gerhard B.; University of Wisconsin. Department of Soils Science. **Effectiveness of a computer land use planning system utilizing generalized data,** (at: Proceedings of the American Society of Photogrammetry Fall Convention) (American Society of Photogrammetry) 1975 pp.754-777.

Abstract: Investigates the capabilities of a planning information system for locating linear tracts of land in an agricultural region and evaluates the usefulness of generalized soil survey information in conjunction with other remote sensing data.

Location: 05.

75.093

Fulton, W.C.; Haynes, D.L.; Michigan State University. **Computer mapping in pest management,** (in: Env. entomology, Vol.4, no.3) 1975 pp.357.

Abstract: Symap is being used to print maps of insect problems over large geographical areas. A pest management program for the Cereal Leaf Beetle is detailed as an example of how Symap works. This technique of computer mapping, though still not perfected, will be valuable in survey timing and farmer alerts.

Location: 05,20,32.

75.094

Gaits, G.M.; Davis, John C., ed.; McCullagh, Michael J., ed.; Britain. Department of the Environment. University of Kansas. NATO Advanced Study Institute. **Design and use of the New Linmap-Colmap System, Display and analysis of spatial data,** 0-471-19915-X, (John Wiley and Sons) 1975 pp.267-281.

Abstract: Provides a description of an automated mapping system, and discusses data display capabilities of the various programmes.

Location: 07.

75.095

Giddings, L.E.; Thompson, E.J.; Lockheed Electronics Company. Department of Life Sciences Applications, Houston, TX.. **Interactive method for digitizing zone maps,** N76-18627, NASA-CR-147466, JSC-09809,.

Abstract: A method is presented for digitizing maps that consist of zones, such as contour or climatic zone maps. A color-coded map is prepared by any convenient process. The map is then read into memory of an image 100 computer by means of its table scanner, using colored filters. Zones are separated and stored in themes, using standard classification procedures. Thematic data are written on magnetic tape and these data, appropriately coded, are combined to make a digitized image on tape. Step-by-step procedures are given for digitization of crop moisture index maps with this procedure. In addition, a complete example of the digitization of a climatic zone map is given.

Location: 17.

75.096

Gierman, D.M.; Ryerson, R.A.; Moran, G.; Switzer, William A.; **Remote sensing and Canada Geographic Information System (CGIS) for impact studies,** (at: Proceedings of the American Society of Photogrammetry. Fall convention) (American Society of Photogrammetry) 1975 pp.697-707.

Abstract: Concerns a study in which remote sensing data in the CGIS were used to relate land use to water quality and for land use mapping. Describes data classification, data manipulation, output capabilities of the CGIS, data

reduction, updating and retrieval procedures.
Location: 05.

75.097

Gierman, D.M.; Ryerson, R.A.; Switzer, William A.; Thompson, G.E., ed.; Canada. Department of Energy, Mines and Resources. Public Relations and Information Services. **Remote sensing and Canada Geographic Information System (CGIS) for impact studies,** (at: Third Canadian Symposium on Remote Sensing) (Canadian Aeronautics and Space Institute) 1975 pp.233-241.
Abstract: Concerns a study in which remote sensing data in the CGIS were used to relate land use to water quality and for land use mapping. Describes data classification, data manipulation, output capabilities of the CGIS, data reduction, updating and retrieval procedures.
Location: 10.

75.098

Gonzales, Jose A.; **Modern cadastre in a developing country,** (at: Proceedings of the Conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute for Modernization of Land Data Systems) 1975 pp.371-390.
Abstract: Given the social-economic situation of El Salvador and the basic concepts of a multipurpose cadastre, the general program is described, the various phases analyzed through the present use of orthophotos for rural cadastres and the combined field and photogrammetric methods for urban cadastre. Both systems are described and a comparison of time and costs of coverage to date. The data bank and cadastral registries are described. Discusses problems of coordination between the organizations responsible for establishing and maintaining the cadastre. Observations are presented concerning the benefits of a multipurpose cadastre for a developing nation.

75.099

Gordon, T.M.; Hutchison, W.W.; Canada. Geological Survey. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **Computer-based field data files in the Regional and Economic Geology Division, Geological Survey of Canada, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada, Geological Survey) 1975 pp.29-31.
Abstract: Outlines a study to investigate the use of computers in collection, storage and retrieval of geological data.
Location: 10.

75.100

Gottschalk, Hans-Jorg; Wilford-Brickwood, Judith M., ed.; Bernard, Rene, ed.; Van Zuylen, Luke, ed.; **Manipulation of raster data,** (at: Automation in cartography. International Cartographic Association. Commission 3 Working Group. Oceanic Cartography Technical Working Session) (ICA) 1975 pp.241-253.
Abstract: Describes raster format processing, and data smoothing. Presents an example of a raster image of contour lines.
Location: 06.

75.101

Griffith, John A.; Registrar General, New South Wales, Australia. **Legal descriptions and their use in developing a cadastre,** (in: Canadian surveyor, Vol.29, no.1) (at: Concepts of modern cadastre) 1975, Mar. pp.49-63.
Abstract: Presents a method of creating a land titles registration system to achieve a land data bank and discusses the legal and economic implications of establishing such a system. Describes the Torrens Register Automation Project, a feasibility study of an automated cadastral system.
Location: 01.

75.102

Groot, Richard; Ontario. Ministry of Natural Resources. Task Force on Geographical Referencing. **Report of a visit to surveys and mapping organizations in the United Kingdom, France, Federal Republic of Germany, Finland and Sweden made in Feb., 1975**, 5, (series: Geographical referencing), (Ontario. Ministry of Natural Resources) 1975.

Abstract: Concerns observations from a visit to several European surveying and mapping organizations. Includes a section on automated mapping and GIS.

Location: 10.

75.103

Grskovich, Edward N.; **Continuous and instantaneous updating of a land data system,** (at: Proceedings of the conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute for modernization of Land Data Systems) 1975 pp.321-340.

Abstract: Online updating of the land data system is recommended only if an appropriate system study has been made which recognizes the possible special risks, costs and implementation delays to which any online updating system is exposed. Only after a study has shown that such a system can provide valuable services with the benefits outweighing the possible disadvantages, should a carefully controlled implementation begin. Land data files are too important to permit any less responsible approach.

75.104

Guinn, Charles; Kennedy, Michael; Toner, William; Hollander, Elizabeth; Dueker, Kenneth J.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Guidebook on information/data handling, issue papers. Technical supporting report** E, PB-266 690/7ST,.

Abstract: Separate issues, which arose during the consideration of critical areas programs, are presented in this reference. The first two papers deal with issues and problems encountered in establishing a computer based information system in state government. Specific problems and potential remedies are discussed, and additional institutional barriers that may prevent successful operation of automated spatial data information systems are described in the latter two articles. The influences of past and present information systems on those evolving are outlined by the chronological paper. Some of the problems involved in the controversial topic of data encoding are presented experimentally.

Location: 17,01.

75.105

Gunther, Alden C.; Army Engineer Topographic Laboratories, Fort Belvoir, VA.. **System for Topographic Inquiry. No. 2 Alphanumeric subsystem. Final report July 70-July 74**, AD-A008 012/7ST, ETL-0003,.

Abstract: The System for Topographic Inquiry (STOPIN)--Alpha-numeric Subsystem is an on-line, topograhic data system developed to demonstrate the capability to store, retrieve, and disseminate large quantities of non-graphic topographic information. This report describes the assumptions and design criteria employed during the development, outlines the software package developed to implement the data base, and provides a description of each data field including the allowable requests for information.

Location: 17.

75.106

Gunther, Alden C.; Army Engineer Topographic Laboratories, Fort Belvoir, VA.. **System for Topograhic Inquiry. No. 3. Alpha-numeric subsystem data base listing. Final report July 70-30 June 74**, AD-A007 739/6ST, ETL-0004, 1975, Mar..

Abstract: The System for Topographic Inquiry (STOPIN)--Alpha-numeric Subsystem is an online, topographic data system developed to demonstrate the capability to store, retrieve, and disseminate large quantities of non-graphic topographic information. This report presents a complete list of the data elements included in the STOPIN data base structure.

Location: 17.

75.107

Gustafson, Robert H.; **Land use data base systems and the assessor: A word of caution, International property assessment administration. Volume 7**, (International Association of Assessing Officers) 1975 pp.268-271.

75.108

Haaland, C.M.; Williams, M.M.; Heath, M.T.; Oak Ridge National Laboratory, TN.. **Computer mapping: Social data for St. Louis**, ORNL-TM-4849, 1975, Aug..

Abstract: A method is described for displaying, by maps drawn by computer techniques, the social data for a city, thereby relating these data to their geographical origin. The method is more complex and provides more detail than SYMAP (Harvard University) or GRIDS (Bureau of the Census), but is less complicated and provides less detail than DIME (Bureau of the Census). Data from the 1970 Census for the city of St. Louis are used to provide an illustrative example of the method, including such variables as total population, black population, white primary individuals, average rent, vacant housing units, overcrowded black housing units, overcrowded white housing units, number of welfare children, crimes against persons, and crimes against property. These data are resolved into a grid of squares, each with an area of 0.25 square mile, which is then superimposed on a geographical map of the city. The relative magnitude of a variable within a grid square is indicated graphically by drawing a number of concentric squares of different sizes within the grid square, such that the number of concentric squares is proportional to the size of the variable within that square. This technique provides an instant visual indication of the variation of magnitude of the variable on the map, and also provides a quantitative indication of the magnitude of the variable within the grid square.

75.109

Hadfield, Colin D.; **Vertical integration of property data**, (at: 1974 URISA proceedings. Vol. 1) (Urban and Regional Information Systems Association) 1975 pp.242-250.

Abstract: The role of the land registration system is anlaysed within the framework of the recommendations of the Ontario Law Reform Commission and the ongoing research to develop a government of Ontario policy position with respect to those recommendations. The problem is defined as the need to design a land registration index and display system integrated with the needs of other prospective users. The solution is presented in the context of an integrated Provincial Land Information System, spanning all levels of administration in Ontario.

75.110

Haefner, Harold; Zurich University. Department of Geography, Switzerland. **Natural resources inventory and land evaluation in Switzerland**, E76-10351, 3, (series: Quarterly reports),.

75.111

Hahne, K.; Welscheid, H.; Pistorius, M.; National Research Institute for Mathematical Sciences, Pretoria, South Africa. **Outline of a data bank system for national and regional planning**, N77-10800/9ST, CSIR-WISK-181, 0-7988-0764-4,.

Abstract: Nine information systems for urban or regional planning in five European Countries and the United States were studied. An analysis was made of output types and programmes, available and desired data, user interface to the system, and the protection of data against abuse and damage. A model is presented for a national and regional planning system.

Location: 17.

75.112

Halasi-Kun, George J.; Kavaliunas, John, ed.; Columbia University, Trenton, N.J.. **Land Oriented Water Resources Data System in New Jersey,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.388-409.

Abstract: Describes the conditions of the State from the viewpoint of interdisciplinary data gathering concentrated in water interaction on the natural environment. The system not only combines general information on water resources and climatic conditions, but also includes demographic, geologic, land use and sanitation data, together with reference listings, map descriptions and lists of State-owned lands and historical sites. A detailed description of a ninety square kilometer area is given from the data bank and included maps and descriptive materials. The advantages and disadvantages of storing data by computer, microfilm, and MTST (magnetic tape/selectric typewriter) are also discussed.

Location: 15.

75.113

Harrison, Derrick G.; City of Calgary. Management Systems Development Department. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. **Accessing urban information by geocoding: Present Calgary applications,** (at: User's Conference on Provincial Coordinates) pp.46-63.

Abstract: Describes some uses that have been made of the City of Calgary's geocoded files. Examples are given of cross-tabulations of various elements of urban data against areas of interest defined by sets of polygons and of various graphic presentations. Recommends that the Province of Alberta accelerate its progam of centralized coordinate control so that geocodes become the location identifiers for land related information systems.

Location: 01.

75.114

Henssen, Ir. J.L.G.; International Office of Cadastre and Land Records Apeldoorn, Waltersingel 1, Holland. **Cadastres, including some aspects of assessment of real property,** (in: Canadian surveyor, Vol.29, no.1) (at: Concepts of modern cadastre) 1975, Mar. pp.114-122.

Abstract: Considers cadastres with respect to parcel identification problems and attribute coding, the use of assessment records in cadastres, and the need for multipurpose cadastres, in land administration and planning applications.

Location: 01.

75.115

Hessdorfer, R.; **On CAMS, a Computer Augmented Mapping System for the production of thematic maps,** (at: Second Annual Conference on Computer Graphics and Interactive Techniques-SIGGRAPH 75) 1975.

75.116

Holmes, Harvard H.; Austin, D.M.; University of California. Lawrence Berkeley Laboratory. University of California. Lawrence Livermore Laboratory. **Cartographic data base in SEEDIS,** LBL-3848, CONF-750706-14, (at: Proceedings of the Conference on Computer Support of Environmental Science and Analysis) (United States ERDA. Div. of Management Information and Telecommunications Systems) 1975 pp.357.381.

Abstract: Describes the purpose of a mapping data base: provides the correspondence between geocoded data items and their geographic location, and provides the essential element in neighborhood analysis. Considers the necessary subsystems for data base acquisition, editing, data base manipulation, display, and the use of the data base by program. At Lawrence Berkeley Laboratory, the data base supports a Socio-Economic-Environmental-Demographic Information System (SEEDIS).

Location: 17.

75.117

Hordon, Robert M.; Rutgers State University, New Brunswick, N.J.. **LOIS and LORDS - Two new land-use information systems for New Jersey**, (in: Professional geographer, Vol.27, no.4) 1975,Nov. pp.485-487.

Abstract: Discusses the advantages and disadvantages of LOIS-Land Oriented Information System and LORDS-Land Oriented Reference Data System. Both are computerized storage and retrieval systems for recording the land and water resources of a region.

Location: 07,14,17,20,28,36.

75.118

Hruska, J.; Hutchison, W.W.; Geoindustria Praha, Czechoslovakia. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **Data-base management system for environmental geological data in Czechoslovakia, Computer-based systems for geological field data: An international state-of-the-art review for 1973**, (series: Geological Survey Canada papers), (Canada, Geological Survey) 1975 pp.94-98.

Abstract: Describes a resource information system in Czechoslovakia and its development

Location: 10.

75.119

Hsu, Mei-Ling; Kozar, K.; Orning, George W.; Streed, P.G.; Davis, John C., ed.; McCullagh, Michael J., ed.; University of Minnesota. Department of Geography. University of Kansas. NATO Advanced Study Institute. **Computer applications in land-use mapping and the Minnesota Land Management Information System, Display and analysis of spatial data**, 0-471-19915-X, (John Wiley and Sons) 1975 pp.298-310.

Abstract: Discusses the MLMIS, a resource information system for planning applications. Describes MLMIS geocoding, file structures, data retrieval and data display capabilities.

Location: 07.

75.120

Hugg, Lawrence; Sniderman, Lawrence; Kavaliunas, John, ed.; Michigan State University. **Interactive GBF creation and computer mapping system**, (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.448-451.

Abstract: A major problem results from delays in creating and processing GBF's suitable for thematic mapping. An interactive systems for the creation of GBF's and computer maps has been designed in an effort to expedite the process considerably. The system, an integrated set of FORTRAN programs, is designed for general use in an on-line interactive mode. The role of this sytem in a daily work schedule has been to decrease the turnaround time of both GBF creation and computer-mapping as well as allowing easy access for general users needing mapped information in a relatively short period of time.

Location: 15.

75.121

Hunt, Donald H.; Kavaliunas, John, ed.; National Ocean Survey. National Oceanic and Atmospheric Administration. **Automated cartography in the National Oceanic and Atmospheric Administration**, (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.129-131.

Abstract: Discusses the use of automated cartography in several areas at NOAA - the National Environmental Satellite Service, the National Weather Service, the Environmental Data System and the National Ocean Survey. Automated cartographic systems being developed at the National Ocean Survey include the U.S. Nautical Charts, the U.S. Aeronautical Charts, and the U.S. Horizontal and Vertical Geodetic Control Maps.

Location: 15.

75.122
Hutcheson, F.T.; Smith, Victor G., ed.; Aird, Paul L., ed; **Application of digital computers to forest inventory in Newfoundland,** (at: Canadian forest inventory methods. Proceedings of a Workshop) (University of Toronto Press) 1975 pp.125-128.
Abstract: Outlines the use of digital computers for forest inventories and forestry mapping in Newfoundland and recommends the development of a complete forest managment information system.
Location: 10.

75.123
Hutchison, W.W.; Roddick, J.A.; Hutchison, W.W.; Canada. Geological Survey. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **Sub-Area Retrieval System (SARS) used on the Coast Mountains Project of the Geological Survey of Canada, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada paper), (Canada, Geological Survey) 1975 pp.32-38.
Abstract: Describes a resource information system for handling geological data. Presents a case study to show data input editing and retrieval.
Location: 10.

75.124
International Association of Chiefs of Police. **Geographic base files for law enforcement - Descriptive report,** 1975.

75.125
International Geographical Union. Commission on Geographical Data Sensing and Processing, Software Inventory Working Group. **Computer software for geographic data handling. Version A. Working draft only,**.
Abstract: Presents standardized descriptions of a number of potentially useful programmes for spatial data handling, classified under the headings: full systems, data management, data manipulation, data analysis, and mapping and graphics.
Location: 01.

75.126
Jeffrey, Keith G.; Gill, Elizabeth M.; Hutchison, W.W.; **G-EXEC: A generalized FORTRAN system for data handling, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada, Geological Survey) 1975 pp.59-61.
Abstract: Outlines a system for handling geological data.
Location: 10.

75.127
Johnson, Christine G.; Kavaliunas, John, ed.; United States. Department of Agriculture. Soil Conservation Service. Hyattsville, MO.. **Advanced mapping system for the soil conservation service,** (at: Auto Cart 2, Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.126-128.
Abstract: Discusses the Advanced Mapping System (AMS) which was developed for the Soil Conservation Service. AMS was designed to meet the need for a fast and efficient way of converting soil information into computer readable form. The AMS uses both automatic and semiautomatic methods to produce a data base for soils information.
Location: 15.

75.128

Kavaliunas, John, ed.; **Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography, Sept. 21-25, 1975,** (American Congress on Surveying and Mapping) 1975.

Abstract: A group of papers which aim to promote an exchange of information about basic methodology, application problems, and software and hardware in the field of automated mapping

Location: 15.

75.129

Kellogg, J.S.; Attorney's Title Guaranty Fund Inc., Denver, CO.. **Modernization of land data systems - Introduction,** (in: Real property probate and trust journal, Vol.10, no.4) 1975 pp.593.

75.130

Kennedy, Michael; Guinn, Charles; **Automated spatial data information systems: Avoiding failure,** (Urban Studies Center) 1975.

75.131

Kennedy, Michael; Meyers, Charles R., Jr.; **Spatial information system: An introduction,** (Urban Studies Center) 1975.

75.132

Kevany, Michael J.; University of Tennessee, Graduate School of Planning, Gaithersburg, MD.. **DIME-based system for planning and analysis,** (at: 12th Annual Conference of the Urban and Regional Information Systems Associations) (Urban and Regional Information Systems and Stockton State College) 1975 pp.82-90.

Abstract: Presents a description of a system to be used in support of urban planning and management. The system provides particular capabilities for considering the geographic aspects of data and data analysis with use of the DIME/GBF. System includes capabilities for returning data for a specially defined area, for computer mapping and reporting of the data, and for allocating resources over the street network. Has been developed and tested for use in natural disaster planning and is being converted for general application to urban planning processes.

Location: 07.

75.133

Kihl, T.H.; Wilford-Brickwood, Judith M., ed.; Bertrand, Rene, ed.; Van Zuylen, Luke, ed.; Canada. Department of Energy, Mines and Resources. Surveys and Mapping Branch. **Automated production-1:50,000 scale topographic maps,** (at: Automation in cartography. International Cartographic Association, Commission 3 Working Group Oceanic Cartography Technical Working Session) (International Cartographic Association) 1975 pp.133-144.

Abstract: Reviews the development of an automated mapping programme for the production of 1:50,000 topographic maps and describes the current (1975) status of the programme with respect to digitization, data processing data editing and data display.

Location: 06.

75.134

Kinzy, Stephen W.; Kavaliunas, John, ed.; Omaha City Planning Department, Omaha,NB.. **ODIS vs CUE: A look at DIME file maintenance,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.430-447.

Abstract: Describes ODIS, an On-Line DIME Implementation System for updating and correcting the GBF/DIME-File. Since 1973 the Omaha/Council Bluffs Metropolitan Area Planning Agency and the City of Omaha have been involved in the development of on-line DIME capabilities. The author looks at specific problems involved in the development of the system and the overall potential of teleprocessing for GBF/DIME-File maintenance. ODIS is compared to the Census Bureau's CUE (Correction, Update and Extension) program and differences and similarities are evaluated. Finally, a few remarks are made regarding national GBF/DIME policy and management as viewed from the local level.

Location: 15.

75.135

Klaus, Barwinski; **Modern cadastre in a highly developed country,** (at: Proceedings of Conference on MOLDS) (North American Institute for Modernization of land Data Systems) 1975 pp.341-370.

Abstract: Describes the development of the Real Estate's Register in West Germany, and discusses the problems involved in developing land data banks.

75.136

Knight, Gene D.; Defense Mapping Agency Aerospace Center: Cartography Department. **Calibration techniques to evaluate prototype cartographic raster scanners,** (at: Proceedings of the American Congress on Surveying and Mapping. Fall Convention (Technical papers)) (American Congress on Surveying and Mapping) 1975 pp.243-251.

Abstract: Defines a methodology used to process scanned data and evaluate the results.

Location: 05.

75.137

Kremer, M.; Lenci, M.; Lesage, M.T.; Hutchison, W.W.; Ecole Nationale Superieure des Mines de Paris. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **SIGMI system of the National School of Mines of Paris, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada, Geological Survey) 1975 pp.54-58.

Abstract: Concerns a data base management system and its capabilities.

Location: 10.

75.138

Kroll, F.S.; Wilford-Brickwood, Judith M., ed.; Bertrand, Rene, ed.; Van Zuylen, Luke, ed.; Hansa Luftbild, Münster, FRG.. **Interactive editing cartographic data,** (at: Automation in cartography. International cartographic Association, Commission 3 Working Group. Oceanic Cartography Technical Working Session) (International Cartographic Association) 1975 pp.145-165.

Abstract: Describes the automated mapping system at Hansa Luftbild with respect to digitization and error detection, and emphasizes various types of data editing.

Location: 06.

75.139

Kusler, John, et al.; **Data needs and data gathering for areas of critical environmental concern. Part 3: Executive statement,** 56, (series: IES reports), (University of Wisconsin. Cente for Geographic Analysis) 1975.

75.140

Lampi, Allan O.; Adams, Norman S.; Meadows, John, ed.; Bare, Bruce, ed.; Ware, Kenneth, ed.; Row, Clark, ed.; United States. Department of Agriculture. Forestry Service. **Application of the GELO mapping system in Region 6, USFS,** (at: Systems analysis and forest resource management. Proceedings of a workshop. Systems Analysis Working Group. Society of American Foresters) (Society of American Foresters) 1975 pp.410-426.

Abstract: Describes the mapping software programme GELO (Geographic Locator) used for resource mapping. Presents a user-oriented example with actual commands and data display.

Location: 10.

75.141

Larsson, Gerhard; Institute of Technology. Land Consolidation and Planning Department, Stockholm, Sweden. **Social and administrative functions of a cadastre: Environmental studies, planning and administration,** (in: Canadian surveyor, Vol.29, no.1) (at: Concepts of modern cadastre) 1975, Mar. pp.75-81.

Abstract: Considers the cadastre as a data base for an information system or data bank, and the need for integration of cadastral data with other data which requires data comparability and a uniform data encoding system based on land parcel numbers

Location: 01.

75.142

Leone, [illegible]ank R.; Ohio. Department of Natural Resources. **State plan for Lake County,** (in: Water spectrum, Vol.6, no.1) 1975, Spring.

Abstract: Ohio's Dept. of Natural Resources established a computerized capability analysis program, which is designed to provide information about land use potentials for each of the state's 88 counties. The first project to be completed is suburban Lake County, to the east of Cleveland. Technical planning assistance for Lake County and its incorporation into the existing state-local relationship is described.

75.143

Lerner, Hilary; **Feasibility of computerized land title search in Fairfax County,** PB-243 297/9ST, FXCO/ORS-75/2, (Fairfax County. Office of Research and Statistics).

Abstract: Provides an indepth evaluation of the feasibility of a computerized title search process for property owners in Fairfax County. Includes review of procedures currently used, their legal bases, and the evaluation of possible charges.

75.144

Linders, James G.; **Digital cartographic management systems,** (at: Canadian Institute of Surveying Convention) 1975.

75.145

Lovingood, Paul E. Jr.; **Computer produced choropleth maps with overlays: An aid in urban and regional analysis,** (in: Greek review of social research, Vol.24,) 1975 pp.311-319.

75.146

Macdonald, G.J.; Alberta Power Limited. Survey Division. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. **To the Users Conference on Provincial Co-ordinates,** (at: User's Conference on Provincial Coordinates) pp.96-97.

Abstract: Discusses Alberta Power's requirements for a central data storage in terms of accuracy, data accessibility, and conversion of present data to a new co-ordinated system.

Location: 01.

75.147

Madill, R.J.; Wilford-Brickwood, Judith M., ed.; Bertrand, Rene, ed.; Van Zuylen, Luke, ed.; **Concepts of computer mapping at the Forest Management Institute,** (at: Automation in cartography. International Cartographic Association. Commission 3 Working Group. Oceanic Cartography Technical Working Session) (International Cartographic Association) 1975 pp.29-38.

Abstract: Outlines problems in forest inventories, the requirements of an ideal automated mapping system and the design of a practical system.

Location: 06.

75.148

Mark, David M.; **Computer analysis of topography: A comparison of terrain storage methods,** (in: Geographic annaler, Vol.57,) 1975 pp.179-188.

Location: 20,27.

75.149

Marston, L.; Meyers, C.; **State resource management programs - Primer, critical area and information data handling,** (U.S. Department of the Interior) 1975.

75.150

Martell, Alberto Torfer; Kavaliunas, John, ed.; Comision de Estudios del Territorio Nacional, Mexico City, Mexico. **Automation of cartography at the Mexican Studies Commission for the National Territory,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.550-555.

Abstract: The Mexican Studies Commission of the National Territory is a branch of the Ministry of the Presidency and is in charge of the natural infrastructure and human resources inventory which are presented in cartographic form and made available to both the private and public sectors. Describe general developments and plans in two areas: 1) activities in the field of photogrammetry, photointerpretation, and geodesy; and 2) the development of a geographic data base and software capacity.

Location: 15.

75.151

Matthews, Joseph R., ed.; Kraemer, Kenneth L., ed.; **Ten years of URISA proceedings, indexes and abstracts,** (URISA) 1975.

75.152

May, Leroy M.; **Bibliography of geocoding and geographic base files,** (Urban and Regional Information Systems Association-Special Interest Group on Geoprocessing) 1975, Jan..

Abstract: Bibliography contains items on geocoding and geographic base files. Most citations are from URISA proceedings for 1967-72 and from the 1971 and 1972 geocoding publications.

Location: 01.

75.153

McCanta, Kerry L.; Fresno County Planning Department, Fresno, CA.. **Fresno County Planning Information System project: The first year resources requirements and prospects,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.32-49.

Abstract: In Fresno County the application of information systems technology at the local level to the practical problems of environmental and land use planning for the County has been underway for approximately one year. This program is being pursued without outside support on the basis that it will provide real benefits to the public. This paper presents the system technology, and the prospects for the future of the Fresno County system.

Location: 07.

75.154

Meadows, John, ed.; Bare, Bruce, ed.; Ware, Kenneth, ed.; Row, Clark, ed.; **Systems analysis and forest resource management. Proceedings of a workshop. Systems Analysis Working Group. Society of American Foresters. Athens, GA. Aug. 11-13, 1975,** (Society of American Foresters) 1975.

Abstract: A collection of papers on systems analysis in forestry with emphasis on modelling and simulation techniques. Includes some articles on automated mapping for resource mapping and on resource information systems

Location: 10.

75.155

Meyer, Carl F.; Carbeau, Andre B.; Mack, Harold L.; University of Missouri. St. Louis, MO.. **Computer-oriented land use forecasting model with mapping capability,** (in: Computers and urban society, Vol.1, no.1) 1975, Jan. pp.31-48.

Abstract: Describes the philosophy, algorithms, and implementation of a computer simulation model for land use forecasting, and the capability of generating maps of these forecasts. The model is applicable to data organized on a census tract basis by counties. Modeling is based on an economic data base of the region, and is extremely flexible of the User. An example set of forecasts and maps is included for illustrative purposes.

75.156

Meyer, Morton A.; Kavaliunas, John, ed.; United States. Bureau of the Census. Geography Division. Washington, D.C.. **Geographic and cartographic program for the 1980 census,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.41-50.

Abstract: To assign correct geographic identifications to the data provided from the major demographic and economic censuses is no small task. It requires accurate boundary information, up-to-date maps and effective data handling techniques. These requirements are met in part by the Bureau's Annaul Boundary and Annexation Survey, the Metropolitan Map Series, and the GBF/DIMESystem. U.S. Census Bureau is also exploring new techniques to facilitate the massive production requirements of the 1980 census and new mapping techniques to graphically illustrate the highlights of census statistical products.

Location: 15.

75.157

Meyer, R.F.; **U.S. Department of the Interior energy-data files,** (in: Geoscience information society proceedings, Vol.5,) 1975 pp.83-95.

Location: 27,28.

75.158

Mikes, Thomas C.; Applied Urbanetics, Incorporated, Washington, D.C.. **Overview of computer mapping and graphic applications using public data files,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.387-396.

Abstract: Discusses a new computer graphic technique, symbol mapping, which solves two of the largest problems in this field: simultaneous display of multiple data elements and clean professional looking graphics prepared directly by computer

Location: 07.

75.159

Miller, W.R.; **Survey of geographically-based information systems in California,** (State of California. Intergovernmental Board on Electronic Data Processing) 1975, May.

75.160

Moellering, Harold; **At the interface of cartography and computer graphics,** (in: Computer graphics, Vol.9, no.1) (at: Proceedings of the Second Annual Conference on Computer Graphics and Interactive Techniques - SIGGRAPH '75) 1975 pp.256-259.

75.161

Moellering, Harold; Kavaliunas, John, ed.; Ohio State University. Department of Geography. **Interactive cartography,** (at: Auto Cart Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.415-421.

Abstract: Makes a distinction between real and virtual maps. Real maps represent tangible reality subject to verification by direct observation. A sheet map is an example of a real map. Virtual maps on the other hand exist in abstract form as, for example, the image which appears on the face of a cathode ray tube (CRT) screen. Virtual maps are easily edited or manipulated. Current trends in computer-assisted cartography are exploring conversion methods between real and virtual maps. Batch processes in automatic cartography will give way to interactive graphical techniques because of the advantages of person-computer interaction. A review of the literature reveals that interactive techniques are most advanced in automatic sheet map production and that rapid progress is being made in the geographic information systems (GIS) field. Further research is needed regarding cartographic symbol displays and human factors in interaction.

Location: 15.

75.162

Moloney, John K.; Energy Resource Conservation Board. Pipe Line Department. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. **Automatic plotting of pipe line locations,** (at: User's Conference on Provincial Coordinates) pp.78-94.

Abstract: Discusses the ERCB's responsibility for accurate compilation and plotting of pipeline locations and the benefits of automatic digitizing and plotting in terms of time, economics, and error detection. Emphasizes the need for a co-ordinate system for Alberta as a common system for all agencies for data referencing.

Location: 01.

75.163

Montgomery, J.H.; Sinclair, A.J.; Wynne-Edwards, H.R.; Fox, A.C.L.; Giroux, G.H.; **Data capture in the construction of MINDEP's computer-based mineral deposits files,** (in: Canadian journal of earth sciences, Vol.12, no.4) 1975 pp.698-703.

Location: 02,09,20,21,24,25,26,27,28,32,33,34,35,36.

75.164

Morrison, Joel L.; Kavaliunas, John, ed.; University of Wisconsin. Cartographic Laboratory. **Map generalization: Theory, practice and economics,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.99-112.

Abstract: Discusses the theory of map generalization with particular reference to the processes of simplification and classification. He suggests that a nonrigorous definition of generalization is of little use for making a map with computer assistance. Offers a more rigorous definition for the purpose of classifying the processes involved in map generalization. Attempts to show how these processes have been and/or may be implemented in practise, and to provide some insight into the economics of generalization algorithms relative to the total map preparation costs.

Location: 15.

75.165
Mott, P.G.; Chismon, H.J.; **Use of satellite imagery for very small scale mapping,** (in: Photogrammetric record, Vol.21,) 1975,Oct. pp.458-475.
Location: 20.

75.166
Moyer, D. David, ed.; **Multi-purpose land parcel data systems,** (at: 1974 URISA conference) (United States Department of Agriculture. Economic Research Service) 1974, Aug..

Abstract: Discusses how data can be merged for use in a multipurpose land data system, using a parcel identifier that is compatible for use with most data files. An example of how a multi-purpose system could provide basic land ownership information to many data users is presented, along with a discussion of the Forsyth County Land data system presently being developed.

75.167
Muller, Jean-Claude; Kavaliunas, John, ed.; University of Georgia. Department of Geography, Athens, GA.. **Statistical accuracy and map enhancement in choroplethic mapping,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.136-148.

Abstract: Briefly discusses the ability of the automatic line plotter to produce a continuum of gray tones for choropleth maps so that the selection of class intervals is not limited by the mapping technology. Primarily concerns the relationship between statiscally accurate maps and comprehensible maps in terms of the number of classes and the amount of total contrast between classes.
Location: 15.

75.168
Murphy, L.P.; Trelinskie, E.G., Jr.; Army Engineer Topographic Laboratories, Fort Belvoir, VA.. **Analog graphic processing for 3-D terrain displays, profiles, and elevation layer tints. Research note Mar.-Apr. 75**, AD-A017 493/8ST, ETL-0026,.

Abstract: This report briefly describes a computerized technique for transforming digital elevation data into gray-level-encoded film. This film is then used for near-real-time analog graphic (nondigital) processing for the display of terrain perspectives, profiles, and elevation layer tints. This report concludes that this approach offers considerable potential, at base and/or field levels, for producing special map graphics, displays, and analyzing terrain conditions for line-of-sight problems or map-of-the-earth flight plans.

75.169
National Aeronautics and Space Administration. **Large Area Crop Inventory Experiment (LACIE). Level 3 baseline: LACIE operations plan (LACIE-C00602),** E79-10053, NASA-TM-79920,.

75.170
National Aeronautics and Space Administration. **Large Area Crop Inventory Experiment (LACIE). Level 3 baseline: Information Storage, Retrieval, and Reformatting Subsystem (ISRRS) requirements (LACIE-C00200-Vol-5-REV-A),** E79-10113, NASA-TM-79977, JSC-09867,.

75.171
Nelson, David H.; Meadows, John, ed.; Bare, Bruce, ed.; Ware, Kenneth, ed.; Row, Clark, ed.; United States. Bureau of Land Management. Oregon state office. **Developing interactive computer graphics for geographic information,** (at: Systems analysis and forest resource management. Proceedings of a Workshop. Systems Analysis Working Group. Society of American Foresters) (Society of American Foresters) 1975 pp.380-393.

Abstract: Reviews the development of the ORIS interactive graphics subsystem for map and attribute manipulation. Discusses data base development, digitization, data storage and interactive techniques. Describes current and potential applications of the system.
Location: 10.

75.172
Nickey, Bradley B.; Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.. **RAMP: a computer system for mapping regional areas,** PB-288 142/3ST, FSGTR-PSW-12, (series: Forest Service general technical reports (Final)),.
Abstract: Until 1972, the U.S. Forest Service's Individual Fire Reports recorded locations by the section-township-range system. These earlier fire reports, therefore, lacked congruent locations. RAMP (Regional Area Mapping Procedure) analysis. This computer-based technique converts locations expressed in section-township-range notations into latitude-longitude coordinates. Two subsystems make up RAMP. The technique can be applied to other types of land-management problems.
Location: 17.

75.173
Osleeb, Jeffrey P.; Moellering, Harold; Cromley, Robert; **Geographical analysis for bus stop location for route design: Method and case study,** 48, (series: Discussion paper), (Ohio State University. Department of Geography) 1975.

75.174
Overstreet, William B.; Kavaliunas, John, ed.; American Congress on Surveying and Mapping. **Charge to the conference,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.3-5.
Abstract: List reasons for automation in mapping and describes two of the benefits in detail: improvement in the economics of mapping and reduction in the incidence of errors.
Location: 15.

75.175
Palmer, J.A.B.; Davis, John C., ed.; McCullagh, Michael J., ed.; **Computer science aspects of the mapping problem, Display and analysis of spatial data,** (John Wiley and Sons) 1975 pp.155-172.
Abstract: Concerns data base management, and data storage of mapping data base with respect to data encoding, file structures, and data retrieval.
Location: 01.

75.176
Pansini, Anthony J.; **Grid coordinate system: Tying maps to computers,** (in: Consulting engineer, Vol.44, no.1) 1975, Jan. pp.50-55.
Abstract: The grid system described provides a simple means of addressing the computer by means of digits that replace the usual post office address, dimension measurement, or other complicated identification
Location: 20,28.

75.177
Panton, D.J.; Control Data Corporation. Digital Image Systems Division, Minneapolis, MN.. **Digital orthophoto study. Final technical report Nov. 74-May 75,** AD-A020 066/7ST,.
Abstract: The purpose of this study is to investigate a number of fast and flexible alternatives in the area of automated cartography as they apply to the production and utilization of digital orthophotos. Three digital algorithms and their associated techniques were developed to generate orthophotos. The primary utilization of digital orthophotos is in data base applications. Concepts and techniques for the construction, maintenance and exploitation of such a normalized data base are discussed. A review of existing orthophoto techniques is

provided for comparison and trade-off determination purpose.

75.178

Paul, Charles K.; Landini, Albert J.; Diegert, Carl; **Remote sensing application for urban planning**, (Jet Propulsion Laboratory. California Institute of Technology) 1975.

Abstract: A Delphi study, composed of the leading land use agencies in southern California, was conducted to determine the critical land use data items in the mountains. Two information systems were developed in parallel, one capitalizing on the city's present computer line printer mapping capabilities and the second utilizing map overlay techniques on an interactive computer terminal. Use of population, housing, and land improvement data for a six-tract pilot area in Woodland Hills illustrates the successful linking of ordinal and nominal files in the interactive system.

75.179

Paul, Charles K.; Landini, Albert J.; **Results of Phase 1 of Land Use Information Delphi Study**, (Jet Propulsion Laboratory. California Institute of Technology) 1975, May 1.

Abstract: Discusses LUMIS which integrates governmental data with natural resource data, and is being developed in conjunction with two other information systems to permit data sharing.

75.180

Payne, John C.; **Experiment in public land record indexing**, (in: American Bar Association journal, Vol.61,) 1975 pp.735-738.

Abstract: Real estate settlement costs could be reduced if public land title records were better indexed. While there has been a lot of discussion about the use of computers in indexing land records, no practical way to employ computers has been devised. In the meantime the Bar should give its attention to an experiment in self-indexing in Tuscaloosa County, Alabama.

Location: 20.

75.181

Penny, R.A.; **Defense mapping agency automated cartographic systems**, (at: Conference of Commonwealth Survey Officers) 1975.

75.182

Peucker, Thomas K.; Chrisman, Nicholas R.; Simon Fraser University. Department of Geography, Burnaby, B.C.. **Cartographic data structures**, (in: American Cartographer, Vol.2, no.1) 1975,Apr. pp.55-69.

Abstract: Characterizes existing geographic and mapping data file structures for two and three-dimensional surfaces in terms of flexibility, topology, and comparability. Describes attempts made by the authors to produce data structures which eliminate some of the existing problems.

Location: 01,20,36.

75.183

Peucker, Thomas K.; Tichenor, M.; Rase, Wolf D.; Davis, John C., ed.; McCullagh, Michael J., ed.; Simon Fraser University. Department of Geography, Burnaby, B.C.. University of Kansas. NATO Advanced Study Institute. **Computer version of three relief representations, Display and analysis of spatial data**, 0-471-19915-X, (John Wiley and Sons) 1975 pp.187-197.

Abstract: Concerns three relief shading techniques. Provides data handling algorithms, and illustrates the data display characteristics.

Location: 07.

75.184

Peucker, Thomas K.; Douglas, David H.; **Detection of surface specific points by local parallel processing of discrete terrain elevation data,** (in: Computer graphics and image processing, Vol.4,) 1975 pp.375-387.

75.185

Peucker, Thomas K.; Kavaliunas, John, ed.; Simon Fraser University. Department of Geography, Burnaby, B.C.. **Theory of the cartographic line,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.508-518.

Abstract: The line, composed of n segments, is partitioned into subjects until each subset has a band with a width less than a predetermined threshold. At each step the partitioning process is performed by selecting as starts and ends of the subsets those points which touch the sides of the bands. Applications of the theory are useful for locating line intersections, line matching (determining if two lines are actually the independently encoded representation of one line), and point-in-polygon search.

Location: 15.

75.186

Pfaltz, John L.; Davis, John C., ed.; McCullagh, Michael J., ed.; University of Virginia. Department of Applied Mathematics and Computer Science. University of Kansas. NATO Advanced Study Institute. **Representation of geographic surfaces within a computer, Display and analysis of spatial data,** 0-471-19915-X, (John Wiley and Sons, New York, N.Y.) 1975 pp.210-230.

Abstract: Presents data handling algorithms for representation of geographic surfaces.

Location: 07.

75.187

Pfrommer, Wilhelm L.; Wilford-Brickwood, Judith M., ed.; Bernard, Rene, ed.; Van Zuylen, Luke, ed.; Institut fur Angewandte Geodasie, Frankfurt Am Main Germany. **Cost and benefit considerations concerning computer-aided cartographic systems,** (at: Automation in cartography. International Cartographic Association Commission 3 Working Group. Oceanic Cartography Technical Working Session) (ICA) 1975 pp.313-320.

Abstract: Concerns the economics of automated mapping systems. Details costs for an entire automated system and compares them to a manual system.

Location: 06.

75.188

Phillips, Fred; Wilson, Vance; City of Stockton. Department of Planning, Stockton, CA.. **From land use data to an interagency information system: A case study of Stockton, CA.,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.91-107.

Abstract: Describes the development of a computerized land use system for the Stockton metropolitan area. The base file, first completed in 1967, provides information needed for many planning purposes, zoning inventories, housing unit counts, etc. Ad-match routines serve as a link to other agency files, and make it possible to form a much wider community information system. By establishing common geographic coordinates, various physical or socio-economic characteristics have been added into the comprehensive neighborhood analysis programme.

Location: 07.

75.189

Pipping, Frederick; Hutchison, W.W.; COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **Use of geological field data systems in Finland: Experiences and problems, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada, Geological Survey) 1975 pp.19-20.

Abstract: Presents a brief state-of-the-art review of Finland field data systems for geological data.

Location: 10.

75.190

Platou, S.W.; Hutchison, W.W.; Aarhus Universitet, Laboratoriet for Geofysik. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **Aarhus University System 2, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada, Geological Survey) 1975 pp.43-46.

Abstract: Presents a system for handling geological data with details concerning user facilities, data management, and file structures.

Location: 10.

75.191

Podehl, W.M.; Canada. Statistics Canada. General Survey Systems Division, Ottawa, ONT.. **Role of a cadastre in statistical information systems,** (in: Canadian surveyor, Vol.29, no.1) (at: Concepts of modern cadastre) 1975, Mar. pp.82-90.

Abstract: Concerns the cadastre as a data base for an information system and discusses the necessity of records with geographic location identifiers for planning applications. Gives the GRDSR as an example of a system which allows data retrieval by small user-defined areas.

Location: 01.

75.192

Ministry of Consumer and Commercial Relations, Land Registration Management Committee; POLARIS. **Concepts report for POLARIS: Province of Ontario Land Registration Information System,** (POLARIS. Toronto Land Titles Office) 1975.

Location: 01.

75.193

Poulin, Jean-Noel; Quebec. Ministere des Terres et Forets, Quebec, P.Q.. **Integrated surveys and mapping. (Leve's et la cartographic integres),** (in: Canadian surveyor, Vol.29, no.1) (at: Concepts of modern cadastre) 1975, Mar. pp.91-103.

Abstract: Examines several components of an integrated survey system, with special attention to the cadastre, and looks into the programme of integrated surveys and mapping, which has been introduced in Quebec.

Location: 01.

75.194

Power, Margaret A.; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. **Computerized geographic information systems, an assessment of important factors in their design, operation and success,** (Washington University. Center for Development Technology) 1975, Dec..

Abstract: Presents a brief history of the development of GIS and discusses principles in system design in terms of user needs, geocoding, data accuracy, and data retrieval. Describes several GIS including SAROAD, STORET, LUNR, MLMIS, NARIS, ORRMIS, UDIS, IMIS, WRIS and COMLUP.

Location: 05.

75.195

Price, A.I.; Smith, R.A.; **Development of the Ontario co-ordinate and its relationship to urban data banks and data management programmes,** (at: Presented at Metropolitan Toronto Region Government Data Processing User's Group).
Location: 01.

75.196

Quinn, Mike; **Regional planning information needs analysis: Report on findings and recommendations,** (Ontario. Ministry of Government Services for the Regional Planning Branch. Department of Treasury and Intergovernmental Affairs. Management Consulting Services) 1975.
Location: 01.

75.197

Quinn, William M.; United States. Forest Service Region 1. Missoula MO.. **Computer mapping and digitizing applications. Northern Region. Forest Service. U.S.D.A., Paper 75-209,** (at: Proceedings of the American Congress on Surveying and Mapping, Fall Convention (Technical papers)) (American Congress on Surveying and Mapping) 1975 pp.81-88.

Abstract: Considers problems related to the use of automated mapping in resource planning applications, encountered by the USFS. Discusses system development with respect to hardware and software, operator training, user education, digitization, data needs, data classification, and environmental modelling with terrain data.

Location: 05.

75.198

Rase, Wolf D.; Kavaliunas, John, ed.; Bundesforschungsanstalt fur Landeskunde und Raumordnung, Bonn-Bod Godesburg, Germany. **Computer-assisted thematic mapping with a dedicated minicomputer system,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.322-329.

Abstract: The German Federal Research Institute of Applied Geography and Planning is developing a small, user-oriented information system for spatial research and planning on the Federal level. The computer-assisted production of thematic maps is one of the most important functions in this system. The hardware for mapping purposes consists of a digitizer, a flatbed plotter, and an interactive storage display. These graphic devices are controlled by a minicomputer with some peripheral equipment. Three groups of applications, including error-minimizing digitization of points and boundary networks; drafting of thematic maps with different levels of quality up to immediate use for printing; and the interactive design of maps and diagrams, are also discussed.

Location: 15.

75.199

Rastatter, J.A.; **Map session using digital techniques,** (at: Proceedings American Society of Photogrammetry Annual Meeting) 1975 pp.242-249.

75.200

Reneman, Frits; Wilford-Brickwood, Judith M., ed.; Bernard, Rene, ed.; Van Zuylen, Luke, ed.; University of Technology. Department of Geodesy, Delft. **System for digital mapping,** (at: Automation in cartography. International Cartographic Association. Commission 3 Working Group. Oceanic Cartography Technical Working Session) (ICA) 1975 pp.254-269.

Abstract: Review the development of an automated mapping system which uses a digital mapping data base. Describes data encoding, software, and geocoding.

Location: 06.

75.201

Rippon, T.E.; Land Titles Office. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. **Land titles and a co-ordinate reference system,** (at: User's Conference on Provincial Coordinates) pp.75-76.

Abstract: Discusses the importance of an automated land information storage and retrieval system.

Location: 01.

75.202

Ritchie, W.D.; Hutchison, W.W.; Canada. Department of Energy, Mines and Resources. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian centre for Geoscience Data. **Selected geological field data systems in Canada: A brief description of their capabilities and objectives, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada, Geological Survey) 1975 pp.21-28.

Abstract: Presents a state-of-the-art review of Canadian resource information systems for geological data.

Location: 10.

75.203

Roberts, Willis F.; Council of Maritime Premiers. Land Registration and Information Service. **Legal measures as a prerequisite of a modernized land data system,** (at: Proceedings of the Conference on Modernization of Land Data Systems (A multi-purpose approach)).

Abstract: Describes the LRIS programme phases and outlines intergovernmental agreements behind the programme. Discusses future legislation issues relating to land recordation.

Location: 01.

75.204

Roberts, Willis F.; MacIntosh, Charles W.; Council of Maritime Premiers. Land Registration and Information Service. **Maritime provinces experience in land registration via computer,** (Land Registration and Information Service) 1975, May 23.

Abstract: Describes the LRIS programme of the Maritimes and its software design, the legal issues involved, and the effects of computerization on land title registration.

Location: 01.

75.205

Rockaway, John D.; University of Missouri. Rolla, MO.. **Engineering geologic data for land-use planning,** (in: Journal of urban planning development division, American Society of Civil Engineers, Vol.101, no.2) 1975, Nov. pp.117-125.

Abstract: Considers the use of geological data, especially map data, in planning applications.

Location: 20,21.

75.206

Rudeford, C.C.; Soil Survey of England and Wales, Aberystwyth. **Storing and processing data for soil and land use capability surveys,** (in: Journal of soil science, Vol.26, no.2) 1975 pp.155-168.

Abstract: Computer methods currently used at Aberystwyth for handling the many observations of soil and site during survey are described. Emphasizes automatic sorting according to existing classifications and land-use, assessing the contents of map-units, and producing automatic dot distribution maps from grid data. Questions of computer strategy and the relevance of economic conditions are discussed.

Location: 17,20,27,28,32,35.

75.207

Russell, Robert M.; Sharpnack, David A.; Amidon, E.L.; **WRIS: a resource information system for wildland management**, PSW-107, (series: USDA Forest Service research papers), (Pacific Southwest Forest and Range Experiment Station) 1975.

75.208

Sampson, R.J.; Davis, John C., ed.; McCullagh, Michael J., ed.; Kansas Geological Survey, Lawrence, K.S.. University of Kansas. NATO Advanced Study Institute. **Surface 2 Graphics System, Display and analysis of spatial data**, 0-471-19915-X, no.1 (series: Kansas Geological Survey series in spatial analysis), 1975 pp.244-266.

Abstract: Concerns a contouring software package for geological data. Describes how the package was developed and what its present capabilities are with respect to data manipulation.

Location: 07.

75.209

Schmidt, Allan H.; Zafft, W.A.; Davis, John C., ed.; McCullagh, Michael J., ed.; **Programs of the Harvard University Laboratory for Computer Graphics and Spatial Analysis, Display and analysis of spatial data**, (John Wiley and Sons) 1975 pp.231-242.

Abstract: Describes the work of the Harvard Laboratory in the development and dissemination of automated mapping software, and details specific programmes: SYMAP, CALFORM, GRID, SYMVU.

Location: 01.

75.210

Schmidt, James G.; **Review of principal land data systems**, (at: Proceedings of Conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute for Modernization of Land Data Systems) 1975 pp.37-46.

Abstract: Throughout the world there are many methods of recording information relative to rights in land. Chiefly divided between registrations of title and registration of deeds. In the United States in most areas indexing is done by name, whereas in Europe there is usually a tract or parcel index. Land information may be transcribed by microfilm, photocopy, computer, typewriting and in some cases could be handwritten. Information for this article was obtained by a questionnaire which was sent to each of the fifty states in the United States and to most European countries.

75.211

Schofer, J.P.; Rutgers State University, New Brunswick, N.J.. **Computer cartography and professional geographers**, (in: Professional geographer, Vol.27, no.3) 1975 pp.335-340.

Location: 07,14,20,28,36.

75.212

Schwarzbart, Gideon; Hirsch, Ernest; Lennon, T.; Robertson, J.R.; Rockey, E.; Meadows, John, ed.; Bare, Bruce, ed.; Ware, Kenneth, ed.; Row, Clark, ed.; United States. Department of Agriculture. Forestry Service. **Benchmark tests on mapping systems used by the U.S. Forest Service**, (at: Systems analysis and forest resource management. Proceedings of a Workshop Systems Analysis Working Group Society of American Foresters) (Society of American Foresters) 1975 pp.394-409.

Abstract: Examines characteristics of the U.S.F.S. grid and line mapping systems and compares computerized mapping programmes to manual operations. Discusses economics, data accuracy, overlaying procedures, and speed of operation.

Location: 10.

75.213

Schweitzer, Richard H., Jr.; Kavaliunas, John, ed.; United States. Bureau of the Census. Geography Division. Washington, D.C.. **Urban Atlas Project: Historical and cartographic review,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.162-168.

Abstract: Reviews the development of the Urban Atlas Project from the viewpoint of the cartographic techniques used, and discusses alternative approaches and the type of decisions that were made in producing the final atlases.

Location: 15.

75.214

Selander, Krister; Kavaliunas, John, ed.; Nordic Institute for Studies in Urban and Regional Planning, Stockholm, Sweden. **Computer graphics in urban and regional planning: Some development project in Scandinavia,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.542-549.

Abstract: Discusses recent developments in Sweden with regard to the use of computer graphics in urban and regional planning. The first part of the paper describes a simple system for graphical presentation based on a Calcomp plotter and developed within an inter-Scandanavia research project. The objective of this project is the development of a prototype urban information system. Experiences and applications of the system in a pilot study are presented. The function of the Swedish color plotter (Ink Jet Plotter) is described and compared with an incremental plotter. The last part of the paper considers the problem of creating a graphical display system with a minimum of hardware dependence.

Location: 15.

75.215

Shumate, W.W.; **Design of a regional geocoded data system, Geocoding applications,** (University of Colorado) 1975.

75.216

Simon, K.W.; **Digital image reconstruction and resampling for geometric manipulation,** (at: Symposium on Machine Processing of Remotely Sensed Data) 1975.

75.217

Simpson, R. Larry; Council of Maritime Premiers. Land Registration and Information Service. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. **To the Users Conference on Provincial Co-ordinates,** .

Abstract: Outlines in general terms, the objectives, the plans, the organization and the degree of success of the Land Registration and Information Service, now well underway in the Maritime provinces, begins by reviewing a bit of the history behind the programme.

Location: 01.

75.218

Sinclair, A.J.; University of British Columbia. Department of Geology, Vancouver, B.C.. **Workshop on computer-based systems for spatial data in geological sciences,** (in: Geoscience Canada, Vol.2, no.4) 1975 pp.212.

Location: 02,10,20,21,23,27,28,33,34,36.

75.219

Sippel, J.; **Automated editing of digital graphic data,** (in: Photogrammetric engineering and remote sensing, Vol.41, no.8) 1975 pp.1047-1058.
Location: 10,20,21,23,27,28,32,36.

75.220

Skaburskis, Andreys; **Survey of data sources for the land use and urban development project. Working papers,** (Metropolitan Transportation Commission) 1975.

75.221

Skaff, Michael S.; University of Detroit. Department of Mathematics. **Non-linear property the valuation model,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.123-133.

Abstract: Mass appraisal techniques involve modeling the relationship between market value and characteristics of real property. It is assumed that market value is defined by the most probable selling price. In this report a non-linear model for property valuation is presented. Moreover, an algorithm is developed which simultaneously establishes the model and isolates the significant characteristics. The resulting equation is then a predictor of value for all parcels in specified neighborhood from which the sales data were extracted. This new appraisal technique can provide more accurate estimates of market value as well as provide for more uniform application of taxing procedures.

Location: 07.

75.222

Smedes, Harry W.; Hutchison, W.W.; United States. Department of the Interior. Geological Survey. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **Land-use planning aided by computer cellular modelling/mapping system to combine remote sensing, natural resources, social, economic, and cadastral data, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada, Geological Survey) 1975 pp.82-83.

Abstract: Briefly describes a method of data merging for land use study.

Location: 10.

75.223

Smith, Caby C.; Dial, O.E.; **Establishing a national program for urban geocoding, Geocoding applications,** (University of Colorado) 1975.

75.224

South Florida Regional Planning Council, Miami, FL.. **Regional information system: A conceptual design,** (South Florida Regional Planning Council) 1975.

75.225

Sprunt, B.F.; Davis, John C., ed.; McCullagh, Michael J., ed.; Portsmouth Polytechnic. Department of Geography, England. University of Kansas. NATO Advanced Study Institute. **Hidden-line removal from three dimensional maps and diagrams, Display and analysis of spatial data,** 0-471-19915-X, (John Wiley and Sons) 1975 pp.198-209.

Abstract: Examines data handling algorithms for solving the "hidden-line" problem in three dimensional maps.

Location: 07.

75.226

Sprunt, B.F.; Davis, John C., ed.; McCullagh, Michael J., ed.; Portsmouth Polytechnic. Department of Geography, England. University of Kansas. NATO Advanced Study Institute. **Relief representation in automated cartography: An algorithmic approach. Display and analysis of spatial data**, 0-471-19915-X, (John Wiley and Sons, New York, N.Y.) 1975 pp.173-186.

Abstract: Identifies and formulates some of the basic data handling algorithms used to solve problems of relief shading. Includes illustrations of different relief shading methods.

Location: 07.

75.227

Stanhope, Terry; Planning Systems Research Limited, Hamilton, ONT., **Horizontal integration of local government property data**, (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.308-330.

Abstract: Outlines possible solutions to selected problems encountered while integrating the specification, acquisition, manipulation, dissemination, and application of property data by more than 15 local government departments and agencies. Of particular significance to those that are, or will be, developing generalized facilities and procedures for data specification, accessing and updating multiple files with interchangeable parcel identifiers, and table driven, interactive, real-time data base updating. Also of interest to persons involved in any of the five phases of data base development. Also describes the various facilities and procedures of the programme and systems evolution process, as well as the Update and Multi-Access Subsystems of the MAD System.

Location: 07.

75.228

Sternitz Rogers Associates Incorporated, Cambridge, MA.. **Santa Ana River Basin: An example of the use of computer graphics in the regional plan evaluation. Final report**, AD-A013-404/9ST, (series: IWR-Contract report), 1975, June.

Abstract: This report explores the possibilities of computer graphics as a tool in the process of watershed planning. The research project involved a study of the Upper Santa Ana River Basin in California and addressed techniques for predicting future land use patterns, analyzing the effects of future land use on resources, the identification of desirable alternative plans for resource development, and the application of these methods toward the generation of environmental impact studies, particularly for regional-scale development decisions. The project consisted of the creation of a computerized data bank of site resources and land use elements, the development of locational attractiveness models defined by major activities or land uses occurring in the basin and the identification of the criteria which define land use decisions, the analysis of the vulnerability of various natural systems to impacts caused by future land use change, and the analysis of the attractiveness models and the impact models by evaluating two locally specified land use plans.

Location: 17.

75.229

Stevenson, D.W.; Imperial Oil Limited. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. **Provincial coordinate system as it applies to the oil industry**, (at: User's Conference on Provincial Coordinates) pp.69-73.

Abstract: Outlines the need in the oil industry for an accurate data referencing system and the benefits of a provincial coordinate reference system with the development of field facilities for oil and gas production.

Location: 01.

75.230

Street, G.S.B.; Woodsford, P.A.; Wilford-Brickwood, Judith M., ed.; Bertrand, Rene, ed.; Van Zuylen, Luke, ed.; Laserscan Ltd., Cambridge U.K.. **HRD-1 laser display system,** (at: Automation in cartography. International Cartographic Association. Commission 3 Working Group. Oceanic Cartography Technical Working Session) (International Cartographic Association) 1975 pp.184.

Abstract: Describes hardware for interactive storage display and film plotting. Discusses its principles, and interactive capabilities. Includes data display examples.

Location: 06.

75.231

Sutterlin, P.G.; Hutchison, W.W.; University of Western Ontario. Department of Geology. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **U.W.O. SAFRAS system, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada. Geological Survey) 1975 pp.62-67.

Abstract: Describes a system for the handling of geological data with respect to its software capabilities.

Location: 10.

75.232

Switzer, William A.; Wilford-Brickwood, Judith M., ed.; Bertrand, Rene, ed.; Van Zuylen, Luke, ed.; **Canada Geographic Information system,** (at: Automation in cartography. International Cartographic Association. Commission 3 Working Group. Oceanic Cartography Technical Working Session) (International Cartographic Association) 1975 pp.58-81.

Abstract: Describes the history and present status of the CGIS.

Location: 06.

75.233

Switzer, P.; Davis, John C., ed.; McCullagh, Michael J., ed.; **Sampling of planar surfaces, Display and analysis of spatial data,** (John Wiley and Sons) 1975.

75.234

Sychuk, Maurice J.; University of Alberta. Faculty of Law. **Legal problems in establishing boundaries for a cadastre,** (in: Canadian surveyor, Vol.29, no.1) (at: Concepts of modern cadastre) 1975, Mar. pp.29-38.

Abstract: Discusses the current (1975) law of boundaries and legal problems in establishing boundaries for a cadastre and briefly describes the possible affects of these problems on land-related information systems.

Location: 01.

75.235

Task Force and Natural Resources and Land Use Information and Technology. **Land: State alternatives for planning and management,** (Council of State Governments) 1975.

75.236

Taylor, D.R.F.; Kavaliunas, John, ed.; Carleton University. Department of Geography, Ottawa, ONT.. **Land use maps in British local planning,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.378-380.

Abstract: Argues that currently the role of the map is a minimal one and discusses several reasons for this. Examines the issues involved in incorporating the map in the emerging geographic information systems being developed by local authorities in Britain. Further argues that while the potential of the digital map is great, there are substantial difficulties involved in realizing this potential.

Location: 15.

75.237

Tessari, E.J.; Land-Related Information Systems. Task Force on Urbanization and the Future. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. **Coordinates and Alberta,** (at: Edmonton, Alta.).

Abstract: Discusses the coordinate situation Provincially, both the availability and use of coordinates and some of the related activities in the province over the past 15 years, and briefly reviews the scope and recommendations of the Task Force study.

Location: 01.

75.238

Tessari, E.J.; Alberta. Survey Control. **Coordination of land-related information in Alberta,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.323-339.

Abstract: Over the past several years many provincial, regional and municipal government agencies in Alberta have tended toward development of comprehensive computerized information systems for more efficient acquisition, management and application of information necessary to their function. The problems associated with both the development and practical operation of such information systems have prompted a province-wide study to both define the problems and make specific recommendations for their solutions.

Location: 07.

75.239

Thompson, Morris M.; **Highlights of Atlanta Conference on Compatible Land Identifiers,** (at: Proceedings of the Conference on Modernization of Land Data Systems) (North American Institute for Modernization of Land Data Systems (A multi-purpose approach)) 1975 pp.17-26.

Abstract: The Atlanta Conference on Compatible Land identifiers was attended by 61 persons experienced in some aspect of land data. Six separate workshop groups discussed the following aspects of a standard land parcel identification system: technical, consequences, land use, engineering, legal, and administration.

75.240

Thorpe, L.W.; Hutchison, W.W.; Royal College of Art Experimental Cartography Unit, London, England. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **Computer processing of cartographic data, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada. Geological Survey) 1975 pp.73-77.

Abstract: Describes a system for digitization and data display of mapping data.

Location: 10.

75.241

Tobler, W.R.; Davis, J.; McCullagh, Michael J., ed.; **Linear operations applied to aerial data, Display and analysis of spatial data,** (John Wiley and Sons) 1975 pp.14-37.

75.242

Tomlinson, Roger F., ed.; **Spatial data characteristics and handling techniques,** (at: Proceedings of the 4th International CODATA Conference on Generation, Compilation, Evaluation and Dissemination of Data for Science and Technology) 1975.

75.243

Travis, Michael R.; Elsner, Gary H.; Iverson, Wayne D.; Johnson, Christine G.; United States. Forestry Service. Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.. **VIEW IT: Computation of seen areas, slope, and aspect for land-use planning. General technical report,** PB-288-141, FSGTR-PSW-11, (United States Forestry Service) 1975.

Abstract: Instructions are provided for using viewit, a computerized technique for delineating the terrain visible from a single point or from multiple observer points and for making slope and aspect analyses. Viewit is capable of individual, view-area, slope, aspect or combined analyses, and can produce elevation profile charts between any two points in a study area. The preparation of data, selection of available options, and interpretation of results are explained.

Location: 17.

75.244

Turke, K.; **Computer aided digitizing of boundary networks,** (at: Technical Working Session of the International Cartographic Association. Commission 3) 1975.

75.245

Turner, W.; Hollander, Elizabeth; Getzels, J.; **Stonewalled: Barriers to adoption of computer oriented land use information systems, Issue papers - Technical report E,** (U.S. Department of the Interior) 1975.

75.246

United States. Bureau of the Census. **Proceedings of the International Symposium on Computer-Assisted Cartography,** 1975, Sept..

75.247

United States. Bureau of the Census. **Program description INTERSECT,** (United States. Department of Commerce. Bureau of the Census) 1975, May.

Abstract: Describes intersect, a software system, consisting of a series of programs that can be used to restructure DIME/GBF files into a file that is coded by geographical intersections.

75.248

United States. Department of the Interior. **Information/data handling: A guidebook for development of state programmes,** (U.S. Department of the Interior and the U.S. Geological Survey) 1975.

75.249

United States. Department of the Interior. **Information/data handling requirements. Technical report C,** (U.S. Department of the Interior and the U.S. Geological Survey) 1975.

75.250

United States. Department of the Interior. Bureau of Land Management. **Strategic plan for information systems-Draft report,** (U.S. Department of the Interior Bureau of Land Management) 1975.

75.251
United States. Department of Agriculture. Forestry Service. **GRID: Computerized system for land-use planning (Parts One and Two)**, 8, (Emory University) 1975.

75.252
United States. Department of the Interior. Geological Survey. Topographic Division. **Research and development in topographic mapping. (Open-file report)**, PB-243 596/4ST, USGS/TD-75/001, (U.S. Geological Survey) 1975, July 24.

Abstract: The annual report, covering the 12-month period ending in April 1975, summarizes the research and development activities of the U.S. Geological Survey, Topographic Division in the Office of Research and Technical Standards and in the Mapping Center offices at Reston, Va., Rolla, Mo., Denver, Colo., and Menlo Park, Calif. The R&D projects mentioned concern the fields of cartography, field surveys, photogrammetry, orthophotomapping, and space technology. Articles by Division personnel prepared for presentation at meetings and conferences or for publication in professional journals and the Manual of Topographic Instructions are also listed.

75.253
United States. Department of the Interior. Geological Survey. Water Resources Division. **WATSTORE-The U.S. Geological Survey's National Water Data Storage and Retrieval System**, (U.S. Geological Survey) 1975.

75.254
United States. National Research Council. Space Applications Board. **Information services and information processing**, (series: Practical applications of space systems), (National Academy of Sciences) 1975.

Abstract: Report on a NASA funded project, to consider future applications of space platform remote sensing systems, with emphasis on practical applications, based on socioeconomic benefits. Focus is on applications for land use planning, environmental quality and resources such as inland water, extractable, marine, and agriculture.

75.255
Uyl, Don Den; Meadows, John, ed.; Bare, Bruce, ed.; Ware, Kenneth, ed.; Row, Clark, ed.; Bowater Inc., Management Information Services. **Techniques of managing data for the industrial forestry firm**, (at: Systems analysis and forest resource management. Proceedings of a Workshop. Systems Analysis Working Group. Society of American Foresters) (Society of American Foresters) 1975 pp.368-379.

Abstract: Discusses data handling techniques for forestry data with respect to data collection, file maintenance and efficient data storage.

Location: 10.

75.256
Van Driel, J. Nicholas; Kavaliunas, John, ed.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Geological information in a computer mapping system for land use planning**, (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.491-495.

Abstract: Describes a new method by which USGS is able to communicate geologic information to planners for land use planning. Composite factor mapping is featured and is useful for identifying various land use areas. The cost of such a method is minimal and the system is easy to operate. The computer mapping system used cellformulated storage, analysis and output to combine geologic, hydrologic and other physical information for environmental analyses in Montgomery County, Maryland.

Location: 15.

75.257

Vinken, R.; Hutchison, W.W.; Niedersaechsisches Landesamt fuer Bodenforschung, Germany. COGEODATA, International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data. **Application of DASCH system to geological field data and documentation files of the Geological Survey, Federal Republic of Germany, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada, Geological Survey) 1975 pp.39-42.

Abstract: Describes the three components of a resource information system for geological data.

Location: 10.

75.258

Voelker, A.H.; Oak Ridge National Laboratory, TN.. **Analysis application of land-use data**, CONF-751064-1,.

Abstract: The ever-broadening scope of planning requires improved techniques for gathering, manipulating, and displaying spatial information. Fortunately, the combination of high-altitude photography as a potential data source and computer-based geographical information systems as a means of achieving efficient data manipulation offer the planner powerful analysis capability. This paper demonstrate the utility of land-use data extracted from high-altitude photography in the development of a computerized land-use model. A technique is explained for synthesizing mapped land-use data categorized in the Anderson Classification System with other spatial variables to create an abstract index of land-use compatibility. The questions of resolution, accuracy, index validation, and index display are considered. Finally, some observations are made about the applicability of computer analysis using remote-sensor data.

Location: 17.

75.259

Voelker, A.H.; Oak Ridge National Laboratory, TN.. **Assessing data needs and related criteria: Discussion of environmental data,** CONF-751057-1,.

Abstract: Data are of fundamental importance to the route selection process. Its selection and manipulation unfortunately is still as much art as science. However, some understanding of the nature of environmental data and its application in resource questions has appeared in recent years. The purpose of this discussion has been to enumerate some of these points. Data loses content through abstraction. All data contains error, and systematic procedures are required to reduce it. For reasons of economy and ease of interpretation, data should be reduced to an essential subset needed for a particular analysis. Unique scales best fit the various levels of siting analysis. Resolution of individual datum can limit the resolution of the analysis. Computers can be a significant tool to the planner if used properly in a cost-conscious way.

Location: 17.

75.260

Vorhies, James H.; Wilkinson, L.A.; **Computerized plant in joint use,** (in: Title news, Vol.54, no.8) 1975.

Abstract: Describes the Safeco Title Insurance Co. plant that serves 12 title companies in seven California counties. A computerized index is used to provide rapid access to microfilm copies of title documents.

75.261

Wahl, Bernardo J.; **Technical features essential to a modern multipurpose land data system,** (at: Proceedings of North American Conference on Modernization of Land Data Systems) (North American Institute for Modernization of Land Data Systems) 1975 pp.95-114.

Abstract: Presents an analysis of the technical features of a cadastral system, necessary to fulfill satisfactorily all demands. Discusses the geodetic bases of cadastral systems, the Terrestrial and Aerophotogrammetric survey methods, mapping and up-dating, and the capacity of the cadastral systems, to serve as a basis for multi-purpose land data banks.

75.262

Ward, Frederick Y.; **Some technical features of multi-purpose land data system,** (at: Proceedings of the North American Conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute for Modernization of Land Data Systems) 1975 pp.115-122.

Abstract: The establishment of a modern multi-purpose land data system meeting certain minimum technical requirements will alleviate most problems and result in the collection and dissemination of this data in an economical manner. The methodology and equipment necessary to institute such a multi-purpose system is presently available and should be begun without delay to avoid the complete collapse of this vital service.

75.263

Wellar, Barry S., ed.; Kavaliunas, John, ed.; Canada. Ministry of state for Urban Affairs. **Computer-assisted information systems and computer-assisted cartography: Tools or tinker toys of urban governance,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Survey and Mapping) 1975 pp.482-490.

Abstract: Comments on the roles of geographic information systems and automated mapping in urban governance in terms of the purposes, means and extent of use.

Location: 15.

75.264

White, Marvin S. Jr.; Kavaliunas, John, ed.; United States. Bureau of the Census. Geography Division. Washington, D.C.. **Map editing using a topological access system,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.422-429.

Abstract: Discusses ARITHMICON, a program under development by the Bureau of the Census to correct bad conditions of the GBF/DIME files. He describes the advantages of supporting a map file edit operation with an access system based on the topological principles of cartography set forth by Corbett. Topics for further research are also suggested.

Location: 15.

75.265

Whitehurst, Charles A.; Dantin, Elvin J.; Harong, Donald; Louisiana State University. **Louisiana Environmental Management System and its utility in water resource planning,** (in: Water resources bulletin, Vol.11, no.4) 1975, Aug. pp.734-750.

Abstract: The Louisiana Environmental Managment System (LEMS) desribed is a data processing program developed to aid in decisions leading to resources legislation. Serving as a central data collection and retrieval point for various agencies, the LEMS will maintain assembled information on the location of monitoring stations and coordinate the files of user agencies with data on: land use, air and water quality, meteorological, climatological, and hydrological phenomena, vegetation, fish and wildlife conservation, population, and economics. This data is geographically stored in relation to the state plane coordinate system.

Location: 05,20,28,33.

75.266

Whitten, E.H. Timothy; Davis, John C., ed.; McCullagh, Michael J., ed.; Northwestern University. Department of Geological Sciences, Evanston, IL.. University of Kansas. NATO Advanced Study Institute. **Practical use of trend-surface analyses in the geological sciences, Display and analysis of spatial data,** 0-471-19915-X, (John Wiley and Sons, New York, N.Y.) 1975 pp.282-297.

Abstract: Concerns the use of trend surface analysis for geological data. Presents

the basic mathematical methods and discusses various surface data analysis techniques.
Location: 07.

75.267
Wilford-Brickwood, Judith M., ed.; Bertrand, Rene, ed.; Van Zuylen, Luke, ed.; **Automation in cartography. International Cartographic Association. Commission 3 Working Group. Oceanic cartography Technical Working Session; Enschede, Netherlands. 21-25th Apr., 1975,** (International Cartographic Association) 1975.
Abstract: Contains papers concerning automated mapping,software, hardware, economics, and GIS.
Location: 06.

75.268
Williams, G. Daniel; Hutchison, W.W.; University of Alberta. Department of Geology. COGEODATA. International Union of Geological Sciences. UNESCO. Division of Earth and Environmental Sciences. Canada. Department of Energy, Mines and Resources. Canadian Centre for Geoscience Data **Advantages of using a generalized system to manage geological data, Computer-based systems for geological field data: An international state-of-the-art review for 1973,** (series: Geological Survey Canada papers), (Canada. Geological Survey) 1975 pp.84-88.
Abstract: Provides an overview of the impact of automation in geological research.
Location: 10.

75.269
Wingate, Frank B.; Stanford University. Department of Industrial Engineering, CA.. **Computer graphics applications in transportation information systems,** PB-254 795/8ST, RR-23,.
Abstract: This paper reports on the results of the application of interactive computer graphics to those public transportation information systems which answer inquiries from the general public. Primary emphasis was placed on development of a graphics application package to control the existing Transit Information System developed by the Stanford/UMTA research group in the Stanford Industrial Engineering Department. Other areas of investigation included operator interaction with the computer display: sorting and searching a large geographic data base: and the practical limitations of geographic displays on a CRT. The U.S. Census Bureau's DIME data base was analyzed, and an interactive graphics map editor was developed.

75.270
Wolley-Dod, W.A.; Canadian Institute of Surveying. Land Survey Committee. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. North American Institute for MOLDS. Washington, D. C.. **North American Conference on modernization of Land Data Systems-A Multi-Purpose Approach,** (at: User's Conference on Provincial Coordinates) pp.31-36.
Abstract: Reports on the MOLDS Conference, briefly outlining the topics presented: user needs, data referencing, and cadastral systems.
Location: 01.

75.271
Wolley-Dod, W.A.; Canadian Institute of Surveying. Land Survey Committee. Canadian Petroleum Association. Survey and Mapping Committee. Canadian Institute of Surveying. Edmonton and Calgary Branches. Canadian Society of Exploration Geophysicists. Association of Professional Engineers, Geologists and Geophysicists of Alberta. Alberta Land Surveyors' Association. University of Alberta. Department of Extension. **Ottawa Conference on Concepts of a Modern Cadastre,** (at: User's Conference on Provincial Coordinates) pp.22-29.

Abstract: Reports on the proceedings of the Ottawa Conference with a brief history of cadastres. Describes the purpose of conference, and comments on the conclusions and resolutions of the conference.
Location: 01.

75.272

Wong, Stanton H.; **Conversion of the conveyance system into a land record system,** (at: Proceedings of the North American Conference of Land Data Systems (a Multi-purpose approach)) (North American Institute for Modernization of Land Data Systems) 1975 pp.279-294.
Abstract: Conversion of present land data files into unified land record system can be achieved economically today on a file-by-file basis. The successful conversion requires the use of an efficient computer data management system and could also be started prior to the implementation of the para-centroid as the parcel identifier. The standardization of the parcel identifier and recording forms would reduce costs for file maintenance and updating.

75.273

Wood, Peter M.; Austin, D.M.; **CARTE: a thematic mapping program,** (in: Computers and graphics, Vol.1, no.2/3) 1975 pp.239-250.
Location: 20.

75.274

Wren, A.E.; Amoco Can. Pet.Co., Calgary, ALTA.. **Contouring and the contour map: A new perspective,** (in: Geophysical prospecting, Vol.23, no.1) 1975, Mar. pp.1-17.
Abstract: Concerns automated contouring theory and programming techniques.
Location: 20,21,23,25,27,28.

75.275

Wunderlich, Gene; UNITED STATES. DEPARTMENT OF AGRICULTURE. ECONOMIC RESEARCH SERVICE. WASHINGTON, D.C.. **Economy in low volume land information systems: How to set up and operate land records systems without spending a million,** (at: 12th Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1975 pp.205-215.
Abstract: Small rural jurisdictions cannot finance the installation of sophisticated land information systems. It is possible to design improved low cost systems without large quantities of hardware, without experts, without major changes in employment. The RAPLI system centers on a period identifier in current use by the assessor and treasurer. The system probably can be installed for less than a single year's cost of the lowest full time employee, and can be operated with no increases in the annual costs of present office functions.
Location: 07.

75.276

Wunderlich, Gene; **Juridical or fiscal cadastre: Economics of land information systems,** (at: Proceedings of the North American Conference on Modernization of Land Data Systems (A multi-purpose approach)) (North American Institute for Modernization of Land Data Systems) 1975 pp.47-68.
Abstract: Combining juridical and fiscal features in a multipurpose cadastre is one way of expanding a land information system. Information is a valuable product and thus can be analyzed in an economic framework--one which would include joint products and common property. Information systems entail organization and coordination. The paper concludes that decentralized networks are generally to be preferred over centralized information systems.

75.277

Yoeli, Pinhas; Davis, John C., ed.; McCullagh, Michael J., ed.; Tel Aviv University. Israel. University of Kansas. NATO Advanced Study Institute. **Compilation of data for computer-assisted relief cartography, Display and analysis of spatial data,** 0-471-19915-X, (John Wiley and Sons, New York, N.Y.) 1975 pp.352-367.

Abstract: Describes digital terrain modelling in terms of data encoding. Discusses digitization of data, orthophotography, and data interpolation to produce a digital terrain model.

Location: 07.

75.278

Yoeli, Pinhas; Davis, John C., ed.; McCullagh, Michael J., ed.; Tel Aviv University. Israel. University of Kansas. NATO ADVANCED STUDY INSTITUTE. **Methodology of computer-assisted cartography, Display and analysis of spatial data,** 0-471-19915-X, (John Wiley and Sons, New York, N.Y.) 1975 pp.130-136.

Abstract: Concerns the impact of automation on cartographic procedures. Discusses data encoding, digitizing, digital terrain modelling, and data display.

Location: 07.

75.279

Zarzycki, J.M.; Kavaliunas, John, ed.; Canada. Department of Energy, Mines and Resources. **Approach to automated cartography: Topographic data banks in Canada,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.318-321.

Abstract: The major thrust of the Topographic Survey is towards the completion of 1:50 000 topographic maps of Canada and the revision of existing maps. Digitized terrain information, initially looked upon as a by-product of maps, is now stored in digitial data banks which permit simple access, update, and retrieval of information. The terrain information data base and data bank concepts are integral parts of the system. Other features of the system, including hardware, are also discussed.

Location: 15.

75.280

Ziemann, Hartmut; Canada. National Research Council. Photogrammetric Research, Ottawa, ONT.. **Technical and legal aspects of a cadastre-based land information system,** (in: Canadian surveyor, Vol.29, no.1) (at: Concepts of modern cadastre) 1975, Mar. pp.9-21.

Abstract: Describes briefly the current (1975) status of land data in Canada. Discusses attribute coding of land parcels and file structures designed for data accessibility and data updating. Considers data base development using cadastral and other data. Discusses economics and the impact of automation in land information systems.

Location: 01.

75.281

Zodrow, E.; **Storage and retrieval of geologic data of mineral deposits on Cape Breton, N.S.,** (in: Canadian Mining and Metallurgical Bulletin, Vol.68, no.758) 1975 pp.117-118.

Location: 02,10,24.

75.282

Computers are now used to map and code soils data, (in: Planning, ASPO magazine, Vol.41, no.8) 1975 pp.7.

Location: 07.

75.283

Concepts of modern cadastre. Ottawa, ONT., (in: Canadian surveyor, Vol.29, no.1) 1975, Mar..

Abstract: A collection of papers on cadastres and automated cadastral systems which consider such topics as geocoding, attribute coding, user needs, data retrieval, and data base development.

Location: 01.

75.284

Geoscience Information Society Proceedings of the 9th Annual Meeting. Volume 5. Miami Beach, FL. Nov. 18, 1974, (American Geological Institute) 1975.

Abstract: 7 papers by various authors are presented. The topics discussed are: GRIB-GIPSY formatted mineral resources data file, hydrologic unit maps, water resources information center, lunar data, computer graphics for oil and gas, and energy data files.

75.285

Systems, Urban Design; **ONSITE, the online site evaluation system,**.

Abstract: A proprietary product of urban design systems, Los Angeles, CA., designed to facilitate the aggregation of data by flexible geographic areas.

75.286

Proceedings of the North American Conference on Modernization of Land Data Systems (A multi-purpose approach), (North American Institute for MOLDS) 1975.

75.287

Prospecting with minicomputer, (in: World mining, Vol.28, no.9) 1975, Aug. pp.53.

Abstract: Briefly describes a minicomputer system installed to aid the Geological Survey of Finland (GSF) in its nationwide search for minerals. The compiled information and computer-drawn maps are evaluated by specialists who then make the decision whether to explore, and possibly undertake mineral development, based on the information and maps.

Location: 02,21,26.

75.288

Soil mapping by computer, (Northeastern Illinois Planning Commission) 1975.

75.289

User's Conference on Provincial Coordinates. Edmonton, ALTA. May 12-13, 1975,.

Abstract: Collection of papers which discusses the need for an Alberta co-ordinate reference system. Contains papers which review work in modernization of cadastral systems and others which describe user needs in industry and government for an Alberta data referencing system

Location: 01.

1976
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76.001

Aangeenbrug, Robert T.; Mitchell, William B.; Marble, Duane F.; Gunther, Alden C.; Elliott, Madonna, ed.; **Geographic information systems panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation on Cartography) (American Congress on Surveying and Mapping) 1976 pp.241-245.

Abstract: Discusses several topics related to GIS: reviews the purpose and current work of the IGU Commission on Geographical Data Sensing and Processing, describes two spatial data systems (Land Use Data Analyses, and System for Topographic Information), and outlines problems in implementation of GIS in the public sector.

Location: 15.

76.002

Adams, Fred; University of Guelph. College of social sciences. **LANDSAT-MSS imagery - A thematic mapping base,** (at: Proceedings of the American Society of Photogrammetry. Fall Convention) (American Society of Photogrammetry) 1976 pp.50-55.

Abstract: Concerns the use of remote sensing data for a data base to produce thematic maps. Presents guidelines for map design using LANDSAT data.

Location: 05.

76.003

Ad Hoc Committee for the Demonstration of an Alberta Land-Related Information System. **Proceedings of Land Information on Computer: A workshop. Edmonton, Alta., June 2, 1976,** (Alberta. Department of Environment. Land Data Coordination Unit).

Abstract: Presents discussions of land related information problems in Alberta, aimed at obtaining input for planning a demonstration of a system for solving these problems. Considers user needs and data needs for geographic data bases and for system capabilities.

Location: 01.

76.004

Alberta. Department of Environment. Resource Coordination Branch. **Canada Land Inventory on computer: Proceedings of a user study/Canada Land Inventory: A test project. Edmonton, Alberta, Sept. 22 - Oct. 31, 1975,** (Alberta. Department of Environment) 1976, Feb..

Abstract: Reports on the results of a test and demonstration project of the GRAPHICS sub-system of the Canadian Geographic Information System (computerized Canada Land Inventory capability maps) which was carried out recently in the Province of Alberta.

Location: 01.

76.005

Alexander, Robert H.; Geological Survey, Reston, VA.. **CARETS: A prototype regional environmental information system. Volume 3. Toward a rational land use information system. Final report,** E77-10015,.

76.006

Alexander, Robert H.; Deforth, Peter W.; Fitzpatrick, Katherine A.; Lins, Harry F., Jr.; McGinty, Herbert K. III; Geological Survey, Reston, VA.. **CARETS: A prototype regional environmental information system. Volume 5. Interpretation compilation and field verfication procedures in the CARETS Project. Final report,** E77-10016,.

Abstract: Identifies the following significant results. Level 2 land use mapping from high altitude aircraft photography at a scale of 1:100,000 required production of a photomosaic mapping base for each of the 48, 50x50 km sheets, and the interpretation and coding of land use polygons on drafting film overlays. To enchance the value of the land use sheets, a series of overlays were compiled, showing cultural features, county boundaries and census tracts, surface geology, and drainage basins. In producing level 1 land use maps from LANDSAT imagery, at a scale of 1:250,000 drafting film was directly overlaid on LANDSAT color composite transparencies. Numerous areas of change were identified, but extensive areas of false change were also noted.

76.007

Alexander, Robert H.; Buzzanell, Peter J.; Geological Survey, Reston, VA.. **CARETS: A prototype regional environmental information system. Volume II. Potential usefulness of CARETS data for environmental impact assessment. Final report,** E77-10021,.

76.008

Alexander, Robert H.; McGinty, Herbert K. III; Geological Survey, Reston, VA.. **CARETS: A prototype regional environmental information system. Volume 12. User evaluation of experimental land use maps and related products from the Central Atlantic Test Site. Final report,** E77-10022,.

Abstract: Identifies the following significant results. Recommendations resulting from the CARETS evaluation reflect the need to establish a flexible and reliable system for providing more detailed raw and processed land resource information as well as the need to improve the methods of making information available to users.

76.009

Allen, M.M.; Wong, C.K.; **Gridding topographical surfaces,** (at: Proceedings of the 13th. International Society for Photogrammetry Congress, Volume 3) 1976.

76.010

Atkey, Col. R.G.; **Some uses of a digital topographic data base,** (at: UN Regional Cartographic Conference for the Americas) 1976.

76.011

Barabba, Vincent P.; Taylor, D.R.F., ed.; United States. Bureau of the Census. Carleton University. Department of Geography, Ottawa, Ont.. **Challenge to cartographers,** (at: Proceedings of (the) Symposium on Geographic Information Processing) 1976, Feb. pp.4-14.

Abstract: Discusses the use of data display for information communication, the problems in user education and acceptance of automated mapping, and the need for graphical standardization in data display.

Location: 19.

76.012

Barr, Joel; Massachusetts Land Records Commission, Boston. **Data base for zoning, subdivision control and permit records,** (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.142-145.

Abstract: States the areas of user requirements that should be considered in planning a data base for municipal zoning, subdivision control and permit records. Also provides guidelines that should be considered in a land records programme.

Location: 18.

76.013

Barrow, Harry G.; Stanford Research Institute, Menlo Park, CA.. **Interactive aids for cartography and photo interpretation. Semiannual technical report, 12 May - 12 Nov. 76,** AD-A033 727/9ST,.

Abstract: This report describes the work performed during the first six months of our project on Image Understanding. The central scientific goal of the research programme is to investigate and develop ways in which diverse sources of knowledge may be brought to bear on the problem of interpreting images. The research is focused on the specific problems entailed in interpreting aerial photographs for cartographic or intelligence purposes, with a view to the eventual development of a collaborative aid to the cartographer or photo interpreter. A key concept is the use of a generalized digital map to guide the process of image interpretation.

Location: 17.

76.014

Baxter, R.A.; Taylor, D.R.F., ed.; Cambridge University. Carleton University. Department of Geography, Ottawa, Ont.. **Evaluation of applications in the United Kingdom,** (at: Proceedings of Workshop on Current Issues in Geographic Data Processing) 1976 pp.103-123.

Abstract: Considers activity in information system development in Britain. Discusses various urban information systems, data banks, mapping programmes as well as data referencing, and software for data analysis.

Location: 19.

76.015

Behrens, John O.; **Taxable property values: Part and happily, parcel, of the 1977 Census of Governments,** (at: Forsyth County Land Records System Workshop) 1976, Mar..

Abstract: Describes the 1977 census of governments survey and relates several questions about property taxes, property use, and property ownership. Special attention is given to the capability of automated land records systems, such as the Forsyth County System, to provide these needed data.

76.016

Bell, Paul D.; Neuffer, John A.; Taylor, M. Lynn; Virkler, Gary W.; Prc Information Sciences Co., McLean, VA.. **Graphic Line Symbolization System. Volumes 1,2,3. Final technical reports Sept. 73-Apr. 75,** AD-A025 686/7ST, 687/5ST, 688/3ST,.

Abstract: This report documents work performed in the development of a Graphic Line Symbolization System (GLSS) for the Defense Mapping Agency-Aerospace Centre. GLSS provides a wide range of data processing capabilities related to cartographic symbology. These include all lineal symbols and many point symbols to support and 1:200,000 series chart production. The system also includes a number of line cleaning and data culling functions. The system has been designed to be highly flexible as to input/output options and symbol specifications build, update and override. The report is in three volumes: Volume 1 - System Analysis and Design: Volume 2 - System Implementation, Operating Procedures and Testing; and Volume 3 - Program Documentation. The purpose of Volume 2 of the Final Technical Report is to describe the major attributes of the system implementation, system operation procedures, and summary results of system testing. The purpose of Volume 3 of the Final Technical Report is to describe the GLSS software in terms of the general operating environment and specific programme modules

76.017

Bennett, Howard C.; Aerial Data Reduction Associates, Inc., Pennsauken N.J.. **Cartographic veracity - A variable that should be a constant,** (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.132-137.

Abstract: Stresses the importance of map accuracy by presenting examples of inadequacies of existing map systems. States the need for multi-purpose land data records with high accuracy standards.

Location: 18.

76.018

Beyer, Arno; Hanke, Peter; Komb. Geod. und Kartogr, Leipzig, East Germany. **Digicart data processing system and its applicability to surveying and mapping,** (in: Jena Review, Vol.21, no.2) 1976 pp.56-59.

Abstract: A newly developed technique for storing data of geodetic surveys in digital form is described. The Digicart technique affords a selective data acquisition, processing and output on the geometric plan view and for describing the topography by vertical control points.

76.019

Biggin, Merle J.; United States. Defense Mapping Agency. Topographic Center. Washington, D.C.. **Automated delineation of ground slope,** (at: Proceedings of the American Congress on Surveying and Mapping, 36th Annual Meeting (Technical papers)) (American Congress on Surveying and Mapping) 1976 pp.413-419.

Abstract: Describes SLOPE, software which generates ground slope information that can be displayed in a variety of ways. Compares SLOPE to manual methods.

Location: 05.

76.020

Birkner, Paul A.; **Administration of zoning and building codes,** (at: Forsyth County Land Records System Workshop) 1976, Mar..

Abstract: Describes the zoning and building code data that is made available for each land parcel in the Forsyth County land record information system.

76.021

Blumberg, Maurice H.; **Generalized geographic information system for managing a non-redundant demographic and resource data base,** (at: 1975 URISA Proceedings. Volume 1) (Urban and Regional Information Systems Association) 1976 pp.181-193.

Abstract: Discusses the objectives, major components, and advantages of the generalized geographic information system.

76.022

Bockes, Olin; Dixon, Dan G.; Ryan, Hollis F.; McDonough, James O.; Wohlmut, Peter G.; Elliott, Madonna, ed.; **Input methods panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.85-126.

Abstract: Describes and illustrates hardware developed or used by four different agencies for digitizing, editing, and manipulating spatial data for map production.

Location: 15.

76.023

Bolton, Ronald; Chrisman, Nicholas R.; McCullagh, Michael J., ed.; Rhind, David W.; Niedermair, F. Robert; Stepher, P. Frederick; Elliott, Madonna, ed.; **Cartographic manipulation panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.207-214.

Abstract: Reviews considerations and problems in data manipulation in automated mapping. Some aspects discussed are: inaccuracy of map data to be digitized, developing a programme which takes into account output device and purpose of map, generalization of data to cut time and costs, accessibility of data and data structures, etc., and provides an example of how one system functions.

Location: 15.

76.024

Booth, J.K.; Taylor, D.R.F., ed.; Canada. Statistics Canada. Carleton University. Department of Geography, Ottawa, Ont.. **Role and advisability of address and population registers: The Canadian experience - Statistics Canada,** 0-7709-0007-0, (at: Proceedings of Workshop on Current Issues in Geographic Data Processing) 1976 pp.30-39.

Abstract: Discusses the development of an experimental urban address register in Canada in terms of data accuracy and updating using Post Office records.

Location: 19.

76.025

Boudreau, John; Council of Maritime Premiers. Land Registration and Information Service. **Project proposal for an assessment and land tenure system,** (Council of Maritime Premiers Land Registration and Information Service) 1976, Apr. 1.

Abstract: Provides an outline for a proposed system for storing and retrieving data files from Statistics Canada, New Brunswick Assessment and LRIS property files. Describes the system in terms of file structures and data retrieval capabilities.

Location: 01.

76.026

Boyle, A. Raymond; Carr, W. Howard; Rhind, David W.; Bockes, Olin; Diello, Joseph; Wohlmut, Peter G.; Elliott, Madonna, ed.; **Outstanding hardware problems panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.137-144.

Abstract: Describes some recent (1974) developments in hardware equipment for automated mapping and discusses problems in hardware such as the need for interactive edition devices, the prohibitive costs of hardware especially for small users, the need for cartographers, planners, and others to articulate their software and hardware requirements, and the necessity of educating potential users in the advantages of automation in cartography.

Location: 15.

76.027

Brandenberger, A.J.; Universite Laval. Faculte de Forestre et de Geodesics Department of Photogrammetry. **Cadastral surveying and mapping in the framework of world and national Surveying and Mapping (S&M) activity,** (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.220-230.

Abstract: A short definition and classification of Cadastral surveying is given. The significance of Cadastral surveying within the entire S & M activity is discussed. Other items covered by the paper are: Completed work, annual progress rates, S & M manpower, annual expenditures. In addition, future Cadastral surveying requirements are discussed, The following items are covered: Required coverage, annual progress rates, efficiency & cost/benefit studies, the impact on National & World economy, the impact on resources development, future requirements for educating and raining of S & M manpower.

Location: 18.

76.028

Brook, A.J.; **Biogeographic grid system for Australia,** (in: Search, Vol.7, no.5) 1976, May.

Location: 28,20.

76.029

Broome, Frederick R.; Orth, Donald J.; Serrajian, Nevaire M.; Robe, E. Llewellyn; Meyers, Charles R., Jr.; Elliott, Madonna, ed.; **Cartographic data bases panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.149-163.

Abstract: Describes three data bases and their structures used in geographic information systems: U.S. Geological Survey data base of geographical names, the Defence Intelligence Agency of geopolitical names, the World Data Banks 1 and 2 of linear spatial data (coastlines, boundaries, railroads, etc.), and

discusses the U.S. Department of the Interior's study to provide a framework from which individual states may assess their land use information requirements.
Location: 15.

76.030
Browden, Leslie; **Land title records: Computerizing records above the local level,** (at: Forsyth County Land Records System Workshop) (Forsyth County, Winston Salem, N.C.) 1976, Mar..
Abstract: Discusses statewide efforts to improve land title record systems in North Carolina. Emphasis is on uniformity needed (e.g., in county systems) for users of decentralized land record systems throughout the state.

76.031
Bryant, Nevin A.; Yu, T.C.; Landini, Albert J.; California Institute of Technology. Jet Propulsion Laboratory. Pasadena, CA.. **LUMIS interactive graphics operating instructions and system specifications,** N76-30821/2ST, NASA-CR-148764, JPL-SP-43-31,.
Abstract: The LUMIS program has designed an integrated geographic information system to assist program managers and planning groups in metropolitan regions. Described is the system designed to interactively interrogate a data base, display graphically a portion of the region enclosed in the data base, and perform cross tabulations of variables within each city block, block group, or census tract. The system is designed to interface with U.S. Census DIME file technology, but can accept alternative districting conventions. The system is described on three levels: (1) introduction to the systems's concept and potential applications; (2) the method of operating the system on an interactive terminal; and (3) a detailed system specification for computer facility personnel.
Location: 17.

76.032
California Institute of Technology. Jet Propulsion Laboratory. Pasadena, CA.. **LUMIS: Land Use Management and Information Systems: Coordinate oriented program documentation,** N77-12483/2ST, NASA-CR-149165, JPL-SP-43-33,.
Abstract: An integrated geographic information system to assist program managers and planning groups in metropolitan regions is presented. The series of computer software programs and procedures involved in data base construction uses the census DIME file and point-in-polygon architectures. The system is described in two parts: (1) instructions to operators with regard to digitizing and editing procedures, and (2) application of data base construction algorithms to achieve map registration, assure the topological integrity of polygon files, and tabulate land use acreages within administrative districts.
Location: 17.

76.033
Cargill, S.M.; Olson, A.C.; Medlin, A.L.; Carter, M.D.; **PACER-Data entry, retrieval, and update for the National Coal Resources Data System (Phase I),** (series: United States Geological Survey professional paper), 1976.
Abstract: Concerns PACER, a set of programmes for data retrieval and file maintenance for use with the USGS data files on coal resources. Provides descriptions of these files, and user documentation.

76.034
Carr, W. Howard; Constantine, John; Healey, Thomas J.; Snow, Edward; Grosso, Patrick F.; Wohlmut, Peter G.; Elliott, Madonna, ed.; **Output devices panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.15-58.
Abstract: Reviews five output device technologies, in automated mapping, (CRT, raster drum scanning and recording devices, microchip arrays for image-scanning, electron beam technology, video disk technology) with illustrations of the hardware and discussions of the cost, accuracy, size, and resolution available

with different hardware and devices.
Location: 15.

76.035

Carter, M.D.; Medlin, A.L.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Availability and application of national coal resource data system,** (in: American Association of Petroleum Geologists bulletin, Vol.60, no.4) 1976 pp.656.
Location: 02,09,20,21,23,25,26,27,28,31,33,36.

76.036

Carter, M.D.; **National coal resources data systems of the U.S. Geological Survey,** (in: Computers and geosciences, Vol.3, no.3) 1976 pp.331-340.
Location: 20,27,33.

76.037

Cartwright, Vern W.; Allesandri, Joseph B.; **Computer cartography offers county unlimited combinations and considerable savings,** (in: Civil engineering, ASCE, Vol.46,) 1976, Nov. pp.60-64.

> **Abstract:** Advanced computer cartographic methods are saving Sacramento county nearly 6,000 dollars per sq. mi (2.6 sq km), in their unified base mapping system. By computerizing map related information which can be updated, edited and corrected using a crt unit, stored for later recall, and then computer-plotted to create maps tailored to specific county departmental needs and scales. Two systems were studied and compared to the more conventional method of scribed overlays. Results of the study and a brief history of Sacramento County's pioneer mapping system detail the progress of the plan.

Location: 05,09,13,20,21,23,28.

76.038

Chang, C.C.; Int. Comput. Ltd., London England. **LAMIS: Local Authority Management Information System,** (at: Proceedings of the International Symposium on Technology for Selective Dissemination of Information) (IEEE) 1976 pp.16-21.

> **Abstract:** Concerns LAMIS, a project to: provide systems and procedures to build and maintain a land and property database for the area of Leeds City, provide systems which would exploit the policy needs of the authority, ensure that these systems would be capable of changing and evolving as the needs and environment changed, and be suitable for transfer to other local autorities with like functions. Describes the need for LAMIS, its design principles, its system components, the benefits which officers and members of the public are enjoying at leeds and what LAMIS may mean to other users.

76.039

Chatterton, William A.; **Modernization of local record keeping of land title information,** (in: Real property, probate and trust journal, Vol.2, no.2) 1976, Summer pp.343-351.

> **Abstract:** This report of the committee on improvement and modernization of land records is directed toward the question of what substantive political or legal and procedural changes can be made in the land title system and related records to improve availability, quality and effectiveness of that system, as well as reduce the cost to users and the public.

76.040

Chatterton, William A.; American Bar Association. **Real Property System in crisis,** (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.35-40.

> **Abstract:** Presents the recommendations of the Committee on Improvement of Modern Land Records for modernizing the present system of processing land title information. Also discusses in detail the judicial cadastre.

Location: 18.

76.041

Chrisman, Nicholas R.; Elliott, Madonna, ed.; **Impact of data structure on geographic information processing,** (at: Proceedings of International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.165-181.

76.042

Chrisman, Nicholas R.; **Topological information systems for geographic representation,** (at: 1975 URISA conference proceedings. Volume 1) (Urban and Regional Information Systems Association) 1976 pp.194-200.

Abstract: Discusses the topological approach to organizing spatial data. Considers the underlying ideas, and problems in implementation. Reviews present status of the GEOGRAF project at Harvard Laboratory for Computer Graphics and Spaital Analysis.

76.043

City and County of Denver. Police Data Centre. **Geographic indexing support system conceptualization,** (City and County of Denver) 1976.

76.044

City of Los Angeles. Department of City Planning. **Where will LANDSAT follow-on image data fit in the geographical hierarchy of planning information systems,** (City of Los Angeles) 1976, July.

Abstract: Advances the need for NASA to incorporate the development of an integrated geographically referenced planning information system as part of its landsat follow-on activities. Such a system must be developed if the landsat projects data is to be widely utilized by urban planners and decision makers.

76.045

Clapp, James L.; Epstein, Earl F.; **Concepts of a multi-purpose cadastre: Problems of design and implementation,** (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.119-131.

Abstract: The recent interest in improving land record and resource information systems requires a coordinated response that satisfies the need of people associated with land transfer, real estate assessment, land management, and environmental protection. The breadth of these needs demands attention to the institutional elements of the problem, as well as the specific technological and design elements. These elements are discussed as well as the relation between them.

Location: 07,18.

76.046

Clark, Allen L.; Calkins, James A.; Singer, Donald; Urick, Mary A.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Lithium data bases and resource estimates: Problems and potentials,** (at: USGS Symposium on Lithium Resources and Requirements by the Year 2000) 1976.

Abstract: A computer data file on lithium resources should contain detailed information related to record identification, name and locations, deposit descriptions, analytical data, and production and reserves. USGS is currently developing improved methods for the handling of mineral resource data, including computerized data files and predictive resource models that systematize postulates, data, and inferences that serve to predict resource-related outcomes. USGS hopes to provide resource availability, technological availability, and economic availability models for computerized resource information banks.

76.047

Clark, Allen L.; **Resource data bases - Resource assessments,** (in: Computers and geosciences, Vol.3, no.3) 1976 pp.309-311.
Location: 20,27,33.

76.048

Collins, Allan; Adams, Marilyn Jager; Pew, Richard; Bolt Beranek and Newman Inc., Cambridge, MA.. **Effectiveness of an interactive map display in tutoring geography. Semi-annual technical report no. 2, 1 Apr.-30 Sept. 76,** AD-A029 752/3ST, BBN-3346, pp.1976, Aug..

Abstract: The purpose of this study was to evaluate the teaching effectiveness of different aspects of the SCHOLAR CAI system. The experiment compared how well students learn using SCHOLAR with (1) the interactive map display of Map-SCHOLAR, (2) a static labeled map, and (3) an unlabeled map. The results of the experiment showed that the students learned significantly more with the interactive map display, than with either the labeled map or the unlabeled map. A new method called backtrace analysis was used to assess the effectiveness of specific aspects of the tutoring strategy and the map system used in the experiment.

76.049

Cook, Henry R.; United States. Defense Mapping Agency. Topographic Center. Washington, D.C.. **Accuracy/quality control of digital data in the Digital Topographic Information Bank,** (at: Proceedings of the American Congress on Surveying and Mapping. 36th Annual Meeting) (American Congress on Surveying and Mapping) 1976 pp.483-488.

Abstract: Reviews standards relating to digital data accuracy and quality for topographic maps. Presents two methods for accuracy determination.

Location: 05.

76.050

Cook, Robert N.; **Future of land records systems,** (at: Forsyth County Land Records System Workshop) 1976.

76.051

Cook, Robert N.; University of Cincinnati. College of Law. **Review of priorities,** (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.196-212.

Abstract: Stresses the need for greater government involvement, particularly at the federal and state levels, in the development and implementation of a modern multipurpose land data system. Topics covered included DIME, MOLDS, federal activities, civil defense, meters, boundary monuments, title registration, coordination

Location: 18.

76.052

Cooke, Donald F.; **ADMATCH adventures,** (series: Census use study), (United States Department of Commerce. Bureau of Statistics) 1976.

Abstract: Presents a comic strip concerning the U.S. Bureau of the Census ADMATCH software for data matching.

Location: 07.

76.053

Cooper, Arthur W.; **Value of Forsyth County's land record system to assessing environmental impacts at the state level,** (at: Forsyth County Land Records System Workshop) 1976.

Abstract: Describes the Forsyth County Land record benefits that will accrue to state agencies dealing with environmental impact assessment.

76.054

Coston, Charles E.; Smolin, Harlan; **CASOC data service recommendations,** (at: 1975 URISA proceedings, Volume 2) (Urban and Regional Information Systems Association) 1976 pp.328-340.

Abstract: A bibliographic index was compiled and published containing all the publications, reports, etc., produced by major resource agencies. Also compiled a data resource index describing the attributes of the data files and the agencies maintaining them. Have established and recommended a set of guidelines which can be used to design and develop general procedures and criteria which should be considered by the users in developing computer capabilities in the two counties

76.055

Council of Maritime Premiers. Land Registration and Information Service. **New approach to land registration and information,** (Council of Maritime Premiers) 1976.

76.056

Cowen, David J.; **Development and applications of the South Carolina Computurized Land Use Information System (CLUIS),** (South Carolina Land Resources Conservation Commission) 1976.

76.057

Craig, William James; **Accessibility measurement and use in land use planning,** (at: 1976 URISA conference proceedings) (Urban and Regional Information Systems Association) 1976.

Abstract: The Minnesota Land management information system (MLMIS) uses both accessibility and capability in estimating the suitability of lands across the state for a variety of uses. Three scales of accessibility are presented: accessibility to the road network, accessibility to local service and market centers, and accessibility to regional activities. Discusses the measurement of accessibility at the various scales and the use of these measurements in determining land-use suitabilities.

76.058

Csati, Erno, ed.; International Cartographic Association. Commission 3. Automation in Cartography. **Multilingual explanatory dictionary of automation in cartography: Manuscript Two volumes,** (Hungary. National Office of Lands and Mapping. Institute of Geodesy and Cartography) 1976.

Abstract: Presents a multilingual dictionary of automated mapping terminology. Contains three parts: Terms with definitions in the given language, hardware information, and a multilingual index of every term of every language.

Location: 10.

76.059

Dangermond, Jack P.; **Summary description of the Maryland Automated Geographic Information (MAGI) System,** (at: 1975 URISA conference proceedings. Volume 1) (Urban and Regional Information Systems Association) 1976 pp.167-180.

Abstract: Describe the MAGI system, originally implemented for automated mapping in land capability analysis and planning applications. Discusses data referencing and data analysis characteristics of the system.

76.060

Diello, Joseph; Gottschalk, Hans-Jorg; Porter, T. Allen; Sinclair, Robert; Cook, Henry R.; Sharp, John V.; Elliott, Madonna, ed.; **Operating systems panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.257-285.

Abstract: Covers several automated mapping systems in use, with respect to hardware, digitization, file structures, editing, retrieval, and display capabilities.

Location: 15.

76.061

Donnelly, John H.; **FCLRIS and local land use planning,** (at: Forsyth County Land Records System Workshop) 1976.

76.062

Dueker, Kenneth J.; **Computer maps and geographic data analysis: An exhibit notebook,** 72, (University of Iowa. Institute of Urban and Regional Research) 1976.

76.063

Dueker, Kenneth J.; Talcott, Richard L.; **Land resource information: Policy and technical issues,** (at: 1975 URISA proceedings, Volume 2) (Urban and Regional Information Systems Association) 1976 pp.433-455.

Abstract: Addresses the basis for public intervention on land use decisions and discusses the broadening scope of this basis, and focuses on information system design implications for the evolving state role in land resource management and planning. Land resource problems and issues are discussed briefly, and on the basis design considerations for statewide land use planning information systems are presented. Specific attention is drawn to the problem of encoding land resource data and the role of systematic analysis of alternative system designs, systems that are responsive to user needs.

76.064

Edgerton, Charles; **Using computerized maps with North Carolina coordinates,** (at: Forsyth County Land Records System Workshop) 1976, Mar..

Abstract: Many benefits to the department of transportation from having land data identified and retrievable by state plane coordinates are noted. The capability to be provided by the Forsyth County Land Records information system is related to specific uses such as right-of-way acquisition, inventories of properties, and route planning.

76.065

Edwards, R.G.; Durfee, R.C.; Oak Ridge National Laboratory, TN.. **Digitizing geographic data with GRIDOT-A generalized program for drawing overlay grids in various map projections,** ORNL/RUS-17,.

Abstract: The GRIDOT computer program draws overlay grids on a Calcomp plotter for use in digitizing information from maps, rectified aerial photographs, and other sources of spatially distributed data related to regional environmental problems. The options of the program facilitate use of the overlays with standard maps and map projections of the continental United States. The overlay grid may be defined as a latitude-longitude grid (geodetic grid), a Universal Transverse Mercator Grid, or one of the standard state-plane coordinate system grids. The map for which the overlay is intended may be in an Albers Equal Area projection, a Lambert Conformal projection, a Polyconic projection, a Transverse Mercator projection, a Universal Transverse Mercator projection, or any of the standard state-plane projections.

Location: 17.

76.066

Elliott, Madonna, ed.; **Auto Cart 1. Proceedings of the International Conference on Automation in Cartography, Reston, VA. Dec. 9-12, 1974.**, (American Congress on Surveying and Mapping) 1976.

Abstract: Represents a transcript of papers intended to promote a greater understanding of technology in automated mapping in terms of complete hardware and software.

Location: 15.

76.067

Environmental Systems Research Institute, Redlands, CA.. **DIMECNV: A system for converting scanner-digitized mapping data tapes to polygon format,** PB-266 438/1ST,.

Abstract: The U.S. Geological Survey (USGS) contracted with Environmental Systems Research Institute (ESRI) to develop a computer system to convert scanner-digitized land use data to polygon format suitable for use with computer graphic devices. Land use maps, correlative census and county boundary maps, drainage basin maps and geologic maps were produced by the Central Atlantic Regional Ecological Test Site (CARETS) project and digitized by Canada Geographic Information System (CGIS). ESRI reformatted the tapes produced by CGIS to a polygon format suitable for producing a graphic display. To demonstrate the system's capability, color transparencies and black-and-white printouts of the Montgomery County, Maryland and Fairfax County, Virginia land use maps were produced by playing the digitized data through plotting devices. Documentation of the computer conversion program is provided with this project.

Location: 17.

76.068

Florida State Department of Health and Rehabilitative Services. Systematic Needs Assessment Project, Tallahassee, Fl.. **Systematic needs assessment project geographic display,** SHR-0002207,.

Abstract: A systematic needs assessment project in Florida employed the geographic display package in the conduct of 744 interviews in Hillsborough County (Tampa). The results of the interview survey were used as the incidence input for a computer map. During the survey, a map of the county was divided into census tracts and digitized and entered into a computer. Using the survey and the map, geographical display computer maping package. Thirty-four problem areas were identified in the survey for which problem incidence and unmet needs could be illustrated by the geographic display plotter programme. Two computer runs depicted the incidence of need for information and referral services across demographic groups and the unmet needs for the same service. Display options that can be produced by the geographic display computer programme are: two concentric circles, three concentric circles, equally divided circles, and pie - cut circles. Each of these options depicts problem incidence or unmet needs, or both, for selected problem areas, demographic groups, and geographic areas. The appendices contain detailed information on the program's operation, related technical specifications, sample programme runs and display maps, and a list of references.

76.069

Flouzat, G.; Cassirame, P.; Quack, J.; Centre d'Etude Spatial des Rayonnements, Toulouse, France. **Agreste Programme. Part 2: French test sites. Progress report Jul-Dec 76,** E77-10151,.

Abstract: The author has identified the following significant results. Results show that the available timber is decreasing after 1980. This comes from the corn extension program. Timber volume evaluations are given by biometrical connections between the mean surface of poplar crowns in a plantation and the mean circumference of the same trees taken at 1.30 m. LANDSAT imagery was found sufficient for large field discrimination, but small parcels like market-gardens are not discernible. Discrete operators were used to smooth, sharpen, or detect edges of digital pictures.

76.070

Foster, Robert W.; **Proposed guidelines for the assignment of parcel index numbers and parcel locator numbers,** (Commonwealth of Massachusetts. Department of Community Affairs. Land Records Commission) 1976, June.

76.071

Freeman, Herbert; Rensselaer Polytechnic Institute. Computer Research Laboratory, Troy, N.Y.. **Automatic data processing techniques for graphic data display generation and analysis. Interim technical report 1 Sept. 75 - 31 Aug. 76,** AD-A033 315/3ST, CRL-50,.

Abstract: This Interim Technical Report summarizes the research carried out under Grant AFOSR 76-2937 during the period, 1 September 1975 - 31 August 1976. The research activities were concerned with three distinct problem areas: (1) the development of efficient algorithms and heuristic techniques for the reconstruction of three -dimensional scenes from multiple photographs, (2) the study of improved coding schemes for line-drawing data, especially topograahic maps, and (3) the development of thoroughly tested computer programmes for eliminating the hidden lines in perspective views of complex planar-faced and quadric-surface-face objects. The individual research areas are briefly described and abstracts of the publications issued during the reporting period are given.

76.072

Fulp, Robert R.; **Linking the land records system to the environmental impact statement,** (at: Forsyth County Land Records System Workshop) 1976.

76.073

Fulton, Patricia; McIntosh, Willard L.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Data base for GEOMAP index,** (at: Proceedings of the American Congress on Surveying and Mapping. Fall convention (Technical papers)) (American Congress on Surveying and Mapping) 1976 pp.329-343.

Abstract: Concerns the USGS mapping data base for producing geologic index maps. Discusses data acquisition, data encoding and file structures, and describes GRASP, the data storage and retrieval system.

Location: 05.

76.074

Fulton, Patricia; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Selective geologic map information,** (in: Photogrammetric engineering and remote sensing, Vol.42, no.8) 1976, Aug. pp.1063-1067.

Abstract: Describes a mapping data base for geological map revision, with interactive data display, and discusses the use of the data base for resource planning applications.

Location: 10,20,21,23,27,28,32,36.

76.075

Gierman, D.M.; **Rural land use changes in the Ottawa-Hull urban region,** (Canada. Department of the Environment. Lands Directorate) 1976.

Abstract: Describes the Canada Geographic Information System (CGIS) and the use of the on-line interactive graphics system in analysing land-use change.

76.076

Grandclaude, P.; **Nature and structure of the information in the earth sciences, some theoretical and practical (files and data banks) aspects,** (in: Sciences de la terre. Serie informatique geologique, no.10) 1976 pp.3-40.

Location: 27.

76.077

Groot, Richard; Taylor, D.R.F., ed.; Canada. Department of Energy, Mines and Resources. Surveys and Mapping Branch. Carleton University. Department of Geography, Ottawa, Ont.. **Automated cartography in the Surveys and Mapping Branch. Department of Energy, Mines and Resources,** (at: Proceedings of (the) Symposium on Geographic Information Processing) 1976, Feb. pp.15-21.

Abstract: Provides the background and rationale for automated mapping in the Surveys and Mapping Branch and describes the proposed system.

Location: 19.

76.078

Gustafson, Glen C.; City University of New York. Department of Geology and Geography. **Recent experience with contouring from orthophoto digital terrain models,** (at: Proceedings of the American Society of Photogrammetry. Fall Convention) (American Society of Photogrammetry) 1976 pp.519-528.

Abstract: Considers interpolation of contour lines using an orthophoto digital terrain model. Compares several different interpolation routines and evaluates their accuracy.

Location: 05.

76.079

Hamilton, Angus C.; University of New Brunswick. Department of Surveying and Engineering. **Development of a land tenure institute: Organization, priorities, communication and participation,** (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.231-233.

Location: 18, 01.

76.080

Harris Corporation. Electro-Optics Operation, Melbourne, El.. **Investigation of cartographic pressplate recording from digital data. Final report, Oct. 75-Feb. 76,** AD-A030 158/0ST,.

Abstract: This study was performed to determine the feasibility of recording cartographic pressplates directly from digital data. The principal technical aspects considered were laser recording technology and pressplate recording materials. The general conclusion was that, with certain qualifications, cartographic quality pressplates can be generated directly from digital data by laser recording with present and emerging technology. The generation of some form of a full color proof directly from digital data was found to be an essential function in any future system. Although there is a high potential for near term development of a full color proofing procedure compartible with direct pressplate recording from a digital data base, this feature merits particular attention in future developmental activities. Similarly, the candidate pressplate materials, while highly promising, must be more thoroughly characterized and compared in a subsequent programme phase to establish practical performance levels, quality control, and availability.

Location: 17.

76.081

Henderson, Joseph; **Land records information system: Utilization by the state property system,** (at: Forsyth County Land Records Systems Workshop) 1976.

Abstract: Describes the use of state plane coordinate references for indexing and retrieval of records concerning state owned land. Suggests that costs to state of engineering plans, legal fees, appraisal fees, and land costs can all be lowered through use of land record system organizated by a geocoded reference system.

76.082

Holbrook, D.R.; **Implications of the Forsyth County Land Record Information System on the administration of the property tax in North Carolina**, (at: Forsyth County Land Records System Workshop) 1976, Mar..

Abstract: Several spinoffs from the Forsyth County Land records information system, including improved map systems and clearer understanding and administration of the property tax system, are discussed.

76.083

Holekamp, Richard A.; CALMA Technical Support, Reston, VA.. **Interactive computer-aided cartography without a programmer**, (at: Proceedings of the American Congress on Surveying and Mapping. Fall Convention (Technical papers)) (American Congress on Surveying and Mapping) 1976 pp.363-369.

Abstract: Discusses the use of minicomputer systems in automated mapping. Considers the benefits in terms of economics, interactive graphics, and data editing.

Location: 05.

76.084

Holland, Edith E.; Registry of Deeds. Rockingham County. Exeter. N.H.. **Recording land transfers**, (at: Proceedings of the Land Records Symposium) (University of maine) 1976 pp.169-171.

Abstract: Describes the processes involved in recording the land-related documents by the Registry of Deeds in Rockingham County. Suggests the possibilities this system offers to incorporate a multi-purpose cadastre.

Location: 18.

76.085

Hutchison, W.W.; **Proceedings of the Symposium on Capture, Management and Display of Geological Data - with special emphasis on energy and mineral resources.**, (in: Computers and geosciences, Vol.2, no.3) 1976 pp.275-376.

76.086

International Geographical Union. Commission on Geographical Data Sensing and Processing. United States. Department of the Interior. Geological Survey. **Computer software for spatial data handling. Review draft. (Extracted from a complete report)**,.

Abstract: Lists programmes for spatial data handling, classified under the headings: Full systems, data manipulation, data analysis, and mapping and graphics. Provides a sample of a standardized programme description.

Location: 01.

76.087

International Geographical Union. Commission on Geographical Data Sensing and Processing. **Digital geographic data handling activities in the U.S. Geological Survey**, PB-266 663/4ST, 1, (series: Interim reports),.

Abstract: This report was prepared for use by USGS personnel in a seminar on Spatial Data Systems. It provides standardized descriptions of 54 USGS computer applications involving geographical data. The descriptive elements include system name, contact, division, branch, objective, method, data manipulation, geographic reference, data volume, products and outputs, and state of developments. Two tables summarize the system descriptions and the data volumes.

Location: 17.

76.088

International Geographical Union. Commission on Geographical Data Sensing and Processing. **Inventory of computer software for spatial data handling**, 1976.

76.089

Jalbert, J.S.; Dobson, J.E.; Oak Ridge National Laboratory, TN.. **Cell-based land use screening procedure for regional siting analysis,** ORNL.NUREG/TM-80,.

Abstract: An energy facility site-screening methodology which permits the land resource planner to identify candidate siting areas was developed. Through the use of spatial analysis procedures and computer graphics, a selection of candidate areas is obtained. Specific sites then may be selected from among candidate areas for environmental impact analysis. The computerized methodology utilizes a cell-based geographic information system for specifying the suitability of candidate areas for an energy facility. The criteria to be considered may be specified by the user and weighted in terms of importance. These programmes produced thematic maps, proximity calculations, and suitability calculations. Programmes are written so as to be transferrable to regional planning or regulatory agencies to assist in rational and comprehensive power plant site identification and analysis.

76.090

Jaro, Matthew A.; Taylor, D.R.F., ed.; United States. Bureau of the Census. Carleton University. Department of Geography, Ottawa, Ont.. **Role and advisability of address and population registers: The American experience,** 0-7709-0007-0, (at: Proceedings of Workshop on Current Issues in Geographic Data Processing) 1976 pp.23-29.

Abstract: Discusses data referencing using DIME, considering such aspects as address matching, file maintenance, and data base development.

Location: 19.

76.091

Johnson, Clyde G.; Hershey, Allen V.; Le Blanc, Aubrey L.; Elliott, Madonna, ed.; United States. Soil Conservation Service, Hyettsville, MD.. **Cartographic symbology panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.215-239.

Abstract: Describes the cartographic symbolization in the automated production of maps used by two agencies. Details the symbols available, the effects of scale on symbols, hardware limitations on symbolization, etc. and provides illustrations.

Location: 15.

76.092

Kennedy, Michael; Guinn, Charles; **Automated spatial data information systems: Avoiding failure,** (at: 1975 URISA proceedings, Volume 2) (Union and Regional Information Systems Association) 1976 pp.74-87.

Abstract: Consists of a series of extracts from a larger work executed by the urban studies center at the university of Louisville (avoiding system failure approaches to integrity and utility).

76.093

Laboratory for Applications of Remote Sensing. **Remote sensing of agriculture, earth resources and man's environment,** (Laboratory for Applications of Remote Sensing) 1976, (circa).

Abstract: Presents an overview of remote sensing technology, techniques, equipment, and application. Includes examples of computer map output.

76.094

Langford, Glen J.; Environmental Planning Consultant. **GRID ANALYSIS technique as an implement for land use planning and resource management,** 7, (series: Grande Prairie-Grand Cache Area Environmental Planning Study. Background report),.

Abstract: Discusses resource data base development and planning applications using GRID ANALYSIS.

Location: 07.

76.095

Larsen, Hans K.; UNBF Department of Economics. **On the economics of cadastral information systems,** (at: 1976 ACEA Halifax Conference).

Abstract: Considers the economics of cadastral systems using the LRIS of the Maritimes as an example and discusses the need for better support for decision-making in system development

Location: 01.

76.096

Linders, James G.; University of Waterloo. Waterloo Research Institute. **Automated cartography subsystem demonstration for the Ministry of Natural Resources,** 6, (series: Geographical referencing), (Ontario Ministry of Natural Resources) 1976.

Abstract: Summarizes the activities and technical developments associated with an automated mapping demonstration project.

Location: 10.

76.097

MacIntosh, Charles W.; **Development of legislation to support a computerized land transfer system,** (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.146-155.

Abstract: Outlines the legal requirements for the development of a computerized cadastral system with respect to security, accessibility, speed and universality.

Location: 07,18.

76.098

Margerison, T.A.; **Computers and the renaissance of cartography,** (Natural Environment Research Council. Experimental Cartography Unit. Royal College of Art.) 1976.

76.099

Mashburn, R.G.; Durfee, R.C.; Edwards, R.G.; Oak Ridge National Laboratory, TN.. **Regrid: A generalized grid-to-grid transformation Procedure,** ORNL/RUS-18,.

Abstract: In recent years geographical information has been collected and digitized for many different regions in the United States. The most common representation of such data has been through the use of grid systems in which the region is broken up into a large number of cells. Since there is a significant number of different geographical coordinate systems and map projections in existence, digitized information exists over the country in a number of different grid systems. In order to merge and analyze spatially distributed data digitized in these different systems, a transformation from one grid to another must be performed. This report describes a generalized technique for grid-to-grid transformation in which a variety of data representations are allowed. Although the procedure was developed for problems in environmental and regional analysis, it is also applicable to non-geographic problems such as heat transfer mesh problems.

Location: 17.

76.100

Mausel, P.; Leivo, G.E.; Lewellen, M.; **Regional land use classification derived from computer processed satellite data,** (in: Journal of American Institute of Planners, Vol.42, no.2) 1976, Apr. pp.153-164.

Location: 07,10,14,28,36.

76.101

McCullagh, Michael J., ed.; Elliott, Madonna, ed.; University of Nottingham, U.K.. **Introduction to software,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.145-147.

Abstract: Defines the difference between systems software and application software for automated cartography, the utility of a small mini-computer for research in automated mapping, and briefly describes the use of color in maps.

Location: 15.

76.102

McCulloch, Charles M.; Bureau of Mines. Pittsburgh Mining and Safety Research Center. **Applying computer-drawn maps of geologic data to analysis of mining problems. Report of investigations: 1976,** PB-255 497/OST, BuMines-RI-8151,.

Abstract: The principles of using computers to draw maps and plot geologic data of mining areas are discussed. The types of maps that can be drawn by a computer are discussed using as examples two separate areas where poor roof and gas emissions caused mining problems. Such maps can be used not only to help identify problem areas, but also to predict areas where problems could occur, thus giving mine operators time to work out solutions prior to mining. The average cost of a computer-drawn map for a mine property is less than $100, including computer time and man-hours for data preparation.

76.103

McEwen, Robert B.; Kosco, William J.; Carter, Virginia; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Coastal wetland mapping,** (in: Photogrammetric engineering and remote sensing, Vol.42, no.2) 1976, Feb. pp.221-232.

Abstract: Discusses a USGS research project for mapping coastal wetlands using remote sensing data and photogrammetric data. Describes the use of orthophotos as base maps and the planned digitization of wetland boundaries for computer analysis.

Location: 10,20,21,23,27,28,32,36.

76.104

McLaughlin, John; Larsen, Hans K.; **Economic considerations in the development of modern cadastral systems,** (at: Proceedings of the Land Records Symposium, University of Maine, at Orono) (University of Maine) 1976 pp.81-118.

Abstract: Considers system evaluation for cadastral systems, using the LRIS monitoring programme as an example.

Location: 07,18.

76.105

McLaughlin, John; Larsen, Hans K.; **Economic evaluation and monitoring of cadastral systems,** (Land Registration and Information Service) 1976, June.

Abstract: Considers the purpose of cadastres and outlines methods for system evaluation. Discusses the LRIS evaluation programme.

Location: 01.

76.106

Meyers, Charles R., Jr.; Wilson, D.L.; Durfee, R.C.; Oak Ridge National Laboratory, TN.. **Application of the ORRMIS Geographical Digitizing and Information System using data from the CARETS Project,** ORNL/RUS-12, pp.1976, Apr..

Abstract: Spatial land-use and census-tract data from the U.S. Geological Survey (USGS) Central Atlantic Regional Ecological Test Site (CARETS) Project are utilized to illustrate the Regional Environmental Systems Analysis (RESA) Program's data digitization, information processing, and display techniques being developed at the Oak Ridge National Laboratory. The techniques and capabilities presented are a part of the Oak Ridge Regional Modeling Information System (ORRMIS) Geographical Data System. To meaningfully compare this data processing system with others currently being used or developed, a standard display format is used that satisfies the requirements of the International Geographical Union (IGU) spatial data encoding experiment. This format consists of spatial data display at the original source map scale and tabular compilation of area measurements of land use by census tract. The ORRMIS scanning-digitizing system is described, including data preparation, mechanical scanning, editing, and hierarchical cell assignment techniques, and the description is illustrated with computer-generated line printer and mechanical plotter displays. The system also has a CRT plotter capability.

76.107

Montero, Felipe J.; **Hard copy maps from orthophotos using coordinates**, (at: Forsyth County Land Records System Workshop) 1976, Mar..

Abstract: Presents a summary description of the procedures employed in preparing computerized maps for the Forsyth County Land records information system. The incorporation of a orthophotographic and a variety of source maps into the data base is discussed, and some potential applications of the system are given

76.108

More, Bob; Smith, Steve; White, Jack; Ad Hoc Committee for the Demonstration of an Alberta Land-Related Information System. Alberta. Department of Environment. Interdepartmental Relations Division. **Land-related information systems comparison: Working paper of the Ad Hoc Committee for the Demonstration of an Alberta Land-Related Information System**,.

Abstract: Provides the Ad Hoc Committee for the Demonstration of an Alberta Land-Related Information System with information to select one of four systems for a demonstration. In addition cost estimates have been developed for budget approval and alternative demonstration procedures have been considered.

Location: 01.

76.109

Morrison, Joel L.; W[illegible], Albert W.; Devine, Edward P.; Elliott, Madonna, ed.; University of Wisconsin. Department of Geography. **Professional implications of automation panel**, (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.251-256.

Abstract: Presents some of the benefits of automated mapping, particularly the reduction of time spent in map production, the possibility of increased time devoted to map design, the production of specialized maps for short term use. Considers some of the ways in which cartographers must adapt to the increasing use of automation.

Location: 15.

76.110

Moyer, D. David, ed.; **Real estate assessment and land records system**, (at: 1975 URISA proceedings, Volume 1) (Urban and Regional Information Systems Association) 1976 pp.85-95.

Abstract: Reviews research by the USDA Economic Research Service on cadastral systems. Also discusses a study, on computerized real estate systems for use by local governments, which aims to develop software for implementing and administering these information systems.

76.111

Niemann, Bernard J. Jr.; **Integrated land information systems: Some perceptions and suggestions**, (at: Proceedings of the Land Records Symposium, University of Maine at Orono, Aug. 25-27, 1976) (University of Maine) 1976 pp.179-195.

Abstract: Suggests that the essential issues affecting land resource data gathering are duplication, inappropriate scales and resolution, vertical vs. horizontal organization of data products on users. Reviews examples of these problems and provides suggestions for improvements

Location: 07,18.

76.112

Nolfi, James R.; Burrill, George C.; Kantauskis, Joseph; Cohen, Marc-David; Vermont Institute of Community Involvement. **Computer mapping technique for natural resource and land use planning**, (Center for Studies in Food Self-Sufficiency) 1976, Mar..

Abstract: The center for studies in food self-sufficiency has developed a computer programme that generates maps to be used in assessing potential for production of given crops in a specified area. A grid system is laid over the area to be studied, and all data related to plant growth and cultivation available for the region is determined for each "Cell" in the system. The data generate a base from which determinations of the total area and distributions of areas suitable for cultivation of a given crop may be calculated.

76.113

Norris, John P.; **Modern land records system for property tax assessment in Maine,** (at: Proceedings of the Land Records Symposium, University of Maine at Orono, Aug. 25-27, 1976) (Univeristy of Maine) 1976 pp.138-141.

Abstract: A multi-use land records system could now provide an assessor with useful information never before available. Metropolitan areas with a sufficient data base and adequate funding provisions face the high start-up costs, but could provide funds for the system continually due to a realistic transfer tax on the large number of property transfers in the area. Rural areas which cannot cooperate with nearby metropolitan areas face serious start up costs due to the lack of a sufficient data base and even more serious funding and operating problems due to such factors as the small number of parcels, limited data base, and strong local influence in land records and property tax administration

Location: 97.

76.114

Opseth, Arthur L.; **Inventory of information on Saskatchewan land. Two volumes,** 1, 0-88977-005-0, (series: Canadian plains reports), (Saskatchewan. Department of the Environment) 1976.

Abstract: Lists with a keyword index, in Volume 1, each branch or department which holds Saskatchewan land information. Presents, in Volume 2, samples of the forms used by these agencies in order to show data collection techniques.

76.115

Petersohn, Fritz; ACSM. Regional Surveying Educational Directorate. New England Section. **Priorities for the development of a land information institute,** (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.216-230.

Abstract: Discusses the need for designing and implementing a modern multi-purpose cadastre with emphasis on establishing a steering committee for formulating procedures for a firm policy.

Location: 18.

76.116

Peucker, Thomas K.; Brassel, Kurt E.; Little, James J.; Elliott, Madonna, ed.; Simon Fraser University. Department of Geography, Burnaby, B.C.. **Terrain representation panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (Amercian Congress on Surveying and Mapping) 1976 pp.183-205.

Abstract: Illustrates and describes several methods of relief shading using computers: Analytical hill shading by relief contouring and inclined contours, Swiss relief shading by adjusting the source of illumination over the map surface, block diagrams (or surface relief modelling). Examines trade off between complete cartographic representation and speed and storage constraints.

Location: 15.

76.117

Phillips, John O.; **Value of the Forsyth System to the federal government,** 1976, Mar..

Abstract: Reviews progress made in developing uniform land record systems at the local level, with emphasis on surveying and mapping requirements notes need for a National Cadastre System in the U.S. and outlines some of the data needs at the Federal level that systems such as the one in Forsyth County can provide.

76.118

Place, M.C.; Shotwell, R.L.; Merritt, E.S.; Bellnap, N.J.; **AOIPS water resources data management system description,** (Earth Satellite Corporation) 1976, Sept. (updated Apr., 1977).

76.119

Rhind, David W.; Edmondson, Frank P.; Steinke, George; Anderson, Walter M.; Moritz, Barry K.; Elliott, Madonna, ed.; **Editing methods panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.59-83.

Abstract: Discusses several different interactive digitizing and editing processes and their related hardware on automated mapping (Rotate-and-Scale Programme with interactive options, Calmagraphic Interactive System, Applicon Interactive Systems) and covers some user aspects and applications.

Location: 15.

76.120

Rice Center for Community Design and Research. Houston, TX.. **Environmental analysis for development planning. Chambers County, Texas Technical report. Volume 6. An approach for describing natural systems and for assessing natural environmental impact,** PB-273 020/8ST,.

Abstract: The report evaluates how information about the natural environmental characteristics of a given geographic area can be integrated with information about various types of land use. The authors are concerned both with the development of a general approach for assessing the natural environmental impact of land users and with the development of an approach for specific application in Chambers County, Texas. The research objectives were: (1) to develop techniques for describing the natural environmental system in a manner which allows the interrelationships between natural environmental characteristics to be identified and described; (2) to develop a methodology for deriving a natural environmental description that reflects both the underlying framework of and relationships between natural features and that allows visualization of the effects of proposed development and its impacts; (3) to develop an approach for identifying and assessing the natural environmental effects of a range of land uses; and (4) to conduct a series of four case study applications of this environmental impact assessment approach with state and local user agencies for the purposes of assessing the applicability of the techniques.

Location: 17.

76.121

Roberts, Willis F.; Council of Maritime Premiers. Land Registration and Information Service. **Operational multi-purpose cadastre,** (at: Pan American Conference. The role of integrated land surveys in the development of countries).

Abstract: Outlines the LRIS project phases and details its data referencing system. Discusses issuses in system development with respect to the LRIS.

Location: 01.

76.122

Rouse, J.T.; Agatston, R.S.; Bright, J.; Procter, R.M.; **AAPG oil and gas-field data bank project, United States and Canada,** (in: American Association of Petroleum Geologists bulletin, Vol.60, no.4) 1976 pp.716.

76.123

Rowe, Peter G.; **Approach for describing natural systems and for assessing natural environmental impacts,** (Rice Center for Community Design and Research) 1976.

76.124

Rystedt, Bengt; Taylor, D.R.F., ed.; Central Board for Real Estate Data, Gavle, Sweden. Carleton University. Department of Geography, Ottawa, ONT.. **Swedish experience: Innovative approaches,** 0-7709-0007-0, (at: Proceedings of Workshop on Current Issues in Geographic Data Processing) 1976 pp.60-72.

Abstract: Discusses developments in Sweden towards reforming information systems for planning applications. Describes data referencing, data retrieval, and data display.

Location: 19.

76.125

Schmidt, Allan H.; Chrisman, Nicholas R.; Peucker, Thomas K.; Elliott, Madonna, ed.; Harvard University, Cambridge, MA.. **Cartographic data structures panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.165-181.

Abstract: Discusses some problems in mapping data structures: The need for built-in error detection, the need for scale and detail flexibility, and the inability of data structures developed for one technique to fit with other automated mapping programmes. Then compares different internal data structures (spaghetti files, location lists, point dictionary files, DIME files, chain files) with respect to problems in data storage, editing retrieval, analysis, etc. Also, considers the effects of surface characteristics on data storage structures.

Location: 15.

76.126

Schmidt, Warren E.; Kavaliunas, John, ed.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Decision day for automating,** (at: Auto Cart 2. Proceedings of the International Symposium on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1975 pp.119-122.

Abstract: Gives eight reasons for automating: economy, speed, original data in machine form, volume, accuracy, graphic precision, computation and data manipulability. He examines the rationale of four selected mapping agencies that had decided to automate. The emphasis in most cases was on manipulability and speed and the paper suggested that these can be combined into a single significant term--'responsiveness.'

Location: 15.

76.127

Schut, G.H.; **Review of interpolation methods for digital terrain models,** (in: Canadian surveyor, Vol.30, no.5) 1976.

Location: 10,20,21,23,28,36.

76.128

Schut, G.H.; **Review of interpolation methods for digital terrain models,** (at: 13th Congress of the International Society for Photo-grammetry).

76.129

Schwarzbart, Gideon; United States. Forestry Service. Management Sciences Staff.. **Analysis of computer support systems for multi-functional planning. Detailed analyses and summary report,** PB-278 436/1ST and PB-278 435/3ST, FS-MASS-3 and FS-MASS-4, (United States. Department of Agriculture. Forestry Service) 1976, Feb. and June.

Abstract: Detailed analyses presents detailed observations concerning nine U.S.F.S. resource information systems: GIM, TRI, GELO, WRIS, MIADS, GRID, LIM, R3MAP and PLOT. Discusses economics, system maintenance requirements, and system characteristics. Summary report reviews and evaluates U.S.F.S. resource information systems for forestry planning applications.

Location: 10,17.

76.130

Shelton, Ronald L.; **Land use information systems in the Midwest**, (Michigan State University. Department of Resource Development) 1976.

76.131

Shields, Robert L.; SCS, MD. **New generalized soil maps guide land use planning in Maryland**, (in: Journal of soil and water conservation, Vol.31, no.6) 1976, Nov.-Dec. pp.276.

Abstract: SCS, in cooperation with the Maryland Dept. of state planning, has developed soil maps, which are being used in an adaptable and accurate soil survey to achieve a statewide land use plan with a strong natural resource base. The system is described as it is being applied in Maryland.

Location: 05,10,20,28,32,34.

76.132

Silver, Jacob; **Geographic base (DIME) system - 1975**, (at: 1975 URISA proceedings. Volume 2) (Urban and Regional Information Systems Association) 1976 pp.130-138.

Abstract: The geographic base (DIME) system developed by the census bureau in 1969 is designed to provide an efficient method for geographically ordering physical, social and economic data for use in operational, management and research programs that deal with local problems. The file itself is a computerized version of a street map and contains all features shown on the census bureaus metropolitan map series, plus block-by-block address ranges, zip codes, and street intersection coordinates. The cue program that is discussed is essentially the vehicle that has been developed to correct, update and extend the files

76.133

Simmonds, Robert L.; **Intergovernmental cooperation in Canada**, (at: Forsyth County Land Records Workshop) 1976.

Abstract: Describes the intergovernmental efforts that were part of the development of the land registration and information service program in the Maritime Provinces of Canada

76.134

Simmonds, Robert L.; Council of Maritime Premiers. LRIS. Systems and Planning Division. **Role of operations function in the evaluation of information technology at the local level - Management function perspective: Using integration to manage diverse files**, (at: Symposium on Information Technology and Urban Governance) (Council of Maritime Premiers) 1976.

Abstract: Brifly reviews the LRIS of the Maritimes and describes the principals of the system's development, and data referencing techniques.

Location: 01.

76.135

Simpson, R. Larry; Council of Maritime Premiers, Halifax, N.S.. **Land and property information systems**, (at: Symposium on Information Technology and Urban Governance) (Ministry of State for Urban Affairs) 1976, June pp.51-71.

Abstract: Overviews the history of LRIS the LRIS programme benefits to be achieved, specific information problems of urban governments which LRIS accommodates, and the technology which underlies the LRIS programme.

Location: 01.

76.136

Singh, J.; Tinline, R.; Cent. Statistical Serv., Queen's Park, N.B.. **Geocoding system for rural Ontario,** (in: Canadian geographer, Vol.20, no.3) 1976 pp.333-335.
Location: 07,20,21,27,28,32,36.

76.137

Smith, Caby C.; Dial, O.E.; **Establishing a national program for urban geocoding,** (at: 1975 URISA proceedings. Volume 1) (Urban and Regional Information Systems Association) 1976 pp.215-226.

Abstract: Traces the development and use of geocoding from its origins. Projects a take-off point in the near future from which the growth curve may be anticipated to be exponential due to legislation, intergovernmental cooperation, bureau of census commitment to the future, the development of methods for dealing with problems of confidentiality, professional associations interest--both national and international and the growth of academic progress in the technology transfer process. Concludes that a uniform urban geocoding program at all levels of government is essential to effective communication between governments.

76.138

Solomon, L.; University of South Carolina, Columbia. **Use of needle-sorted data banks in geographic inquiry,** (in: Journal of geography, Vol.75, no.8) 1976 pp.476-483.
Location: 20,21,28,36.

76.139

South Florida Regional Planning Council, Miami, FL.. United States. Department of Housing and Urban Development. **Developing geographic-based information files: A bibliographic essay. Final report,** PB-257 668,.

Abstract: This bibliography provides the reader with a range of materials dealing with the design and implementation of geographic-based information files. Readings range from the theory of system development to the techniques of using remotely sensed data in the planning process.

Location: 01,17.

76.140

Spann, G.W.; **System approach to land use inventories and information systems,** (at: 1975 URISA proceedings. Volume 1) (Urban and Regional Information Systems Association) 1976 pp.153-166.

Abstract: Presents an approach to system development for land use or resource information systems. Discusses uses of remote sensing data, user needs economics, and system evaluation

76.141

Stacey, Gary S.; Lacenere, Anthony M.; **Real property valuation systems,** (at: 1975 UEISA proceedings. Volume 1) (Urban and Regional Information Systems Association) 1976 pp.96-108.

Abstract: Discusses the historical development of the application of EDP to assessing property values. The income, market value, and replacement cost techniques are described. A section discusses the problems inherent in any computerized assessment process. The future directions for research are then discussed.

76.142

Stevenson and Kellogg Ltd., Management Consultants. Council of Maritime Premiers. Land Registration and Information Service. **Evaluation of a single computerized system of land assessment and its joint development by New Brunswick, Nova Scotia and Prince Edward island,** (Stevenson and Kellogg Ltd., Management Consultants) 1976, Apr. 15.

Abstract: Evaluates an effort to develop a single computerized system of land assessment as compared to separate projects by each of the three provinces

involved in terms of economics, and provides recommendations for system development.
Location: 01.

76.143
Stine, Gordon E.; Diello, Joseph; Nardozza, Vincent J.; Gottschalk, Hans-Jorg; Hoinkes, Christian; Elliott, Madonna, ed.; **ICA Commission panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.127-135.
Abstract: Describes the tests being developed and used by Commission 3 (Automation in Cartography) to evaluate computer hardware and software used in automated mapping. The Commission is preparing universal testing standards to enable comparisons of the capabilities of different systems in digitization processing, accuracy and output characteristics.
Location: 15.

76.144
Stokes, Charles J.; Schenkerman, Stanley; Higher Education Center for Urban Studies, Bridgeport, CT.. **Monitoring the pattern and performance of land use allocation systems in the City of Bridgeport. Final report,** PB-261 739/7ST, UO-LCCM-BRI-76-004,.
Abstract: Even at a moderate rate of population growth, in the 1980s Bridgeport, Connecticut, will exhaust its supply of available land for extensive development. This study provides both a method of predicting land use changes as population grows and a land use information or monitoring system. Applicable directly to Bridgeport, the simulation model can be used anywhere and is designed to employ all available local land use data, using the Census Block as the data unit. LUIS (Land Use Information System) within a relatively simple and flexible framework overcomes many of the jurisdictional, technical, geographical as well as social problems in data collection and interpretation. The key issue in this study is whether Bridgeport should permit itself to grow.

76.145
Switzer, William A.; Taylor, D.R.F., ed.; Canada. Department of the Environment. Lands Directorate. Carleton University. Department of Geography, Ottawa, Ont.. **Canada Geographic Information System,** (at: Proceedings of (the) Symposium on Geographic Information Processing) 1976, Feb. pp.22-29.
Abstract: Describes the CGIS, a system for storage, manipulation, and analysis of mapping data, and provides examples of its applications, (land use mapping, land capability analysis, etc.) to illustrate CGIS capabilities.
Location: 19.

76.146
Switzer, William A.; Canada. Department of the Environment. Lands Directorate. **Role of planning as seen by the operations function,** (at: Information technology and urban governance. Proceedings of a Symposium sponsored by the Ministry of State for Urban Affairs) (Canada. Ministry of State for Urban Affairs) 1976, June pp.200-206.
Abstract: Deals with the role of the planning function or planners in the evolution of information technology from an operational point of view.
Location: 01.

76.147
Symons, D.C.; Taylor, D.R.F., ed.; National Capital Commission. Research and Computer Services, Ottawa, Ont.. Carleton University. Department of Geography, Ottawa, Ont.. **Urban information system of the National Capital Commission,** (at: Proceedings of Symposium on Geographic Information Processing) 1976, Feb. pp.59-74.
Abstract: Briefly discusses four major approaches to urban information systems and their advantages and disadvantages. Describes in detail the subsystem of the NCC integrated information system.

Location: 19.

76.148
Taylor, D.R.F., ed.; Carleton University. Department of Geography, Ottawa, Ont.. **Proceedings of the Symposium on Geographic Information Processing. Ottawa, Ont., Jan. 24, 1976,** (Carleton University) 1976, Feb..
Abstract: A collection of papers which concerns automated mapping and GIS. Provides system descriptions for GIS in various government organizations and discusses topics such as acceptance of automation, accuracy, standards, and methods of geographic data handling.
Location: 19.

76.149
Taylor, D.R.F., ed.; Carleton University. Department of Geography, Ottawa, Ont.. **Proceedings of a Workshop on Current Issues in Geographic Data Processing,** 0-7709-0007-0, (Carleton University) 1976.
Abstract: A collection of papers from Europeans and Canadians involved in geographic information systems. Covers such issues as geocoding, technology exchange, data retrieval and system development and design.
Location: 19.

76.150
Teicholz, Eric; Dorfman, J.; **Computer cartography world-wide technology and markets,** (International Technology Marketing) 1976.

76.151
Thompson, Morris J.; Elliott, Madonna, ed.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Open discussion - Whither by 1984,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.287-291.
Abstract: Presents some general possibilities for the future of automated mapping, the types of technology available, possible applications, costs of equipment, and public education.
Location: 15.

76.152
Thomson, Stephen C.; **Land Use Information Service,** (at: Forsyth County Land Records System Workshop) 1976.

76.153
Tobler, W.R.; University of Michigan. Department of Geography. Ann Arbor, MI.. **Analytical Cartography,** (in: American Cartographer, Vol.3, no.1) 1976, Apr. pp.21-31.
Abstract: Explains the purpose of a course in analytical cartography and describes its content by some examples.
Location: 01,20,36.

76.154
Tomlinson, Roger F., ed.; Calkins, Hugh W.; Marble, Duane F.; **Essential parts of a geographic information system. Chapter two, Computer handling of geographical data,** (UNESCO Press) 1976.
Abstract: Provides a conceptual framework for GIS to enable system evaluation and system comparisons
Location: 01.

76.155

Tomlinson, Roger F., ed.; Calkins, Hugh W.; Marble, Duane F.; **Computer handling of geographical data: An examination of selected geographic information systems,** 92-3-101340-8, (series: Natural resources research), (UNESCO Press) 1976.

Abstract: Examines five major environmental information systems: CGIS, PIOS, MLMIS, LUNR and ORRMIS in terms of data acquisition, data encoding, data classification, storage and retrieval. Also describes an experiment in data encoding

Location: 10.

76.156

Tomlinson, Roger F., ed.; Ziegler, Arthur L.; Southard, Rupert B.; Elliott, Madonna, ed.; IGU Commission on Geographical Data Sensing and Processing, Ottawa, Ont.. **Governmental implications of automation panel,** (at: Auto Cart 1. Proceedings of the International Conference on Automation in Cartography) (American Congress on Surveying and Mapping) 1976 pp.247-250.

Abstract: Considers the problems in using automated mapping in the public sector of the U.S.A. with respect to the high cost of computing systems and the lack of access to computer technology for local and state planners, the need to educate public officials in the usefulness of automated mapping, the need for better intergovernmental communications, and for a central national source of surveying and mapping data.

Location: 15.

76.157

Tomlinson, Roger F., ed.; Calkins, Hugh W.; Marble, Duane F.; **Lessons to be learned from review of existing systems and digitizing methods. Chapter 3, Computer handling of geographical data: An examination of selected geographic information systems,** (UNESCO Press) 1976 pp.20-24.

Abstract: Presents recommendations resulting from a synthesis of the case study material and a data encoding experiment, as they relate to each subsystem of the conceptual framework for a GIS. Indicates the major lessons to be learned from comparative analysis of GIS.

Location: 01.

76.158

Tucker, T.C.; Oak Ridge National Laboratory, TN.. **CATCH: Computer Assisted Topography, Cartography and Hypsography. Part 4. SEESII: A subroutine package for determining the visibility of objects throughout a region,** ORNL/TM-3790 (Pt. 4),.

Abstract: The SEESIJ subroutine package was developed to aid location planning when visibility is an important criterion. For each point on a geographic grid, SEESII counts the number of objects in a specified collection which are visible from that point, determines the distance to the nearest object, and finds the maximum weight (importance) associated with a visible object.

76.159

United States. Bureau of the Census. **GBF/DIME system, a geographic dimension for decision-making. Conference proceedings. Oct. 30-31, 1975. San Francisco, CA.,** PB-258 584/2ST, GE-60/7, (United States. Department of Commerce) 1976, Apr..

Abstract: Proceedings are presented for the seventh in a series of conferences devoted to the Census Bureau's GBF/DIME System. The conference was held in San Francisco, California, on October 30-31, 1975. The papers presented and the resulting discussions were on the following topics: Status of Nationwide GBF/DIME System, ABAG: Defining a Regional Role, Geosites: An Empirical Study of Geoprocessing in U.S. Cities and Counties, The Development of Contra Costa County's CUE Program, Putting the CBF to Work Within a School System, Project CABLE - Automation in the San Francisco Police Department, the Consortium Approach, Statewide Accident Location and Reporting System, LUMIS: An Interactive Graphics Display Information System Based on Census DIME File Technology, GBF/DIME System: The Acceptance of Innovation, Zen and the Art of DIME File Maintenance, Geocoding Applications in the Philadelphia School District, to Serve the Community, and

Utilities' Use of the GBF/DIME System.

76.160

United States. Fish and Wildlife Service. Office of Biological Sciences. **Summary of workshop on environmental/ecological mapping needs of the U.S. Fish and Wildlife Service held at Monterey, CA. on Aug 31-Sept 2, 1976,** PB-268 396/9ST, FWS/OBS-76/27, 1976.

Abstract: The summary gives an overview of the workshop's proceedings and the topics covered. The workshop was designed to bring the experience and expertise of various federal agencies to bear on the mapping needs of the U.S. Fish and Wildlife Service. The session was aimed toward developing a framework of information from these agencies, with the end goal of achieving internal and external mapping adequacy and consistency by the FWS in their future endeavors. The agencies involved in this workshop were the U.S. Geological Survey, Bureau of Land Management, Soil Conservation Service, U.S. Forest Service, and the U.S. Fish and Wildlife Service.

76.161

United States. Water Resources Council. Washington, D.C.. **Nationwide analysis. Appendix L. Toward a structured ecological data base,** PB80-110794,.

Abstract: The Nationwide Analysis was conducted by the Water Resource Council's member agencies and reflects their viewpoints about the existing and future water and related land requirements. The report describes the National Wetlands Inventory and Habitat Classification and Analysis, two major fish and wildlife habitat information projects of the Fish and Wildlife Service

76.162

University of New Brunswick. Department of Surveying and Engineering. **Infrastructure information requirements in the Maritime provinces: An analysis,** (Council of Maritime Premiers. Land Registration and Information Service) 1976, June.

Abstract: Outlines the main components of a land information system for the Maritimes and recommends steps to establish such a system. Describes the need for regional and urban information systems. Reviews federal information systems. Considers user needs, economics, and benefits of a land information system.

Location: 01.

76.163

Voelker, A.H.; Oak Ridge National Laboratory, TN.. **Indices, a technique for using large spatial data bases,** ORNL/RUS-15,.

Abstract: This report attempts to bridge the gap between the large geographical data bases being compiled by states and other institutions and the resource management questions that will eventually be answered by means of such data. Computerized techniques for isolating factors or indices relevant to management questions and for expressing these indices in elements of a data base are presented in the context of five indices of potential use to resource managers developed for the land-use models of the Regional Environmental Systems Analysis program (RESA) of the Oak Ridge National Laboratory.

Location: 17.

76.164

Wagar, J. Alan; **Land-use planning: A view from Holland,** (in: Journal of forestry, Vol.74, no.1) 1976, Jan..

Location: 09,10,20,28,32,34,35.

76.165

Ward, J. Leroy; **Intermediate - scale mapping**, (in: Journal of research of the United States Geological Survey, Vol.4, no.3) 1976, May-June pp.253-254.

Abstract: Describes the intermediate-scale mapping programme of the USGS, designed with digitization in mind for proposed mapping data base development.

Location: 05,20,27,21,33,36.

76.166

Waugh, Thomas C.; Taylor, D.R.F.; **GIMMS - An example of an operational system for computer cartography**, (in: Canadian cartographer, Vol.13, no.2) 1976, Dec. pp.158-166.

Location: 06,20,21,23,26,27,28,36.

76.167

Waugh, Thomas C.; Taylor, D.R.F., ed.; Edinburgh University. Carleton University. Department of Geography, Ottawa, Ont.. **Standard spatial referencing techniques for rural geocoding**, 0-7709-0007-0, (at: Proceedings of (a) Workshop on Current Issues in Geographic Data Processing) 1976 pp.46-59.

Abstract: Investigates the relationship between standard spatial data referencing techniques and rural geocoding. Discusses grid, point, boundary and segment encoding and how these relate to rural geocoding.

Location: 19.

76.168

Waugh, Thomas C.; Taylor, D.R.F., ed.; Edinburgh University. Carleton University. Department of Geography, Ottawa, Ont.. **Transfer of technology - System design considerations**, 0-7709-0007-0, (at: Proceedings of (a) Workshop on Current Issues in Geographic Data Processing) 1976.

Abstract: Concerns technology exchange and those aspects of system design which affect transferability i.e. language, interfaces, modularity, performance and graphics.

Location: 19.

76.169

Werner, Pamela A.; Bruck, H.W.; **National geocoding systems: Design of a converter**, (at: Computers, local government and productivity. Volume 2. Thirteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1976 pp.512-527.

Abstract: Because of its status as the most common denominator, the county or county equivalent was chosen as the basic unit for converter construction. The county based converter file when used together with DIME coded county boundary segment file will create a powerful point boundary systems capability. Many of the problems encountered in developing the macrolevel converter are analogous to problems found at the urban level.

76.170

Williams, John R.; Pioneer National Title Insurance Co., Boston, MA.. **Recordings acts today and yesterday**, (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.156-165.

Abstract: Discusses the various facets of recording real estate transactions

Location: 18.

76.171

Willams, Owen W.; **NAVSTAR global positioning system and a first order framework for information systems**, (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.66-80.

Abstract: Discusses a proposed navigation system which can be used in surveying and mapping, and in automated GIS for data referencing.

Location: 07,18.

76.172

Wilson, D.L.; Oak Ridge National Laboratory, TN.. **CELNDX: a computer program to compute cell indices,** ORNL-RUS-14,.

Abstract: The CELNDX program has been developed as a tool to manipulate variables in a spatially distributed cellular data base. Additional capability has been built into the programme to synthesize spatial variables into abstract variables called indices. In the basic calculation supplied with the programme, indices are computed as weighted linear sums of the spatial cellular data. A spatial integration of cell rings is also available in the basic programme. The programme employs a modular subroutine structure to allow flexibility in input data organization and data analysis. The programme is driven by a series of commands that define programme setup, data base structure, index computation, and output. A special provision exists for the manipulation of hierarchical cell structures. Various output options are included to display and/or save the index results. As an example, indices for accessibility to each cell within a portion of a study region are calculated on the basis of road network, water bodies, and slope.

76.173

Witiuk, Sid W.; Taylor, D.R.F., ed.; Canada. Statistics Canada. Census Field. Carleton University. Department of Geography, Ottawa, Ont.. **Geographically referenced data storage and retrieval system (GRDSR) of Statistics Canada: Yesterday and today,** (at: Proceedings of (the) Symposium on Geographic Information Processing) 1976, Feb. pp.46-58.

Abstract: Covers briefly the development of the GRDSR, describes the system's components, and discusses issues such as compatibility, accuracy, economics, user needs, confidentiality, and availability.

Location: 19.

76.174

Witiuk, Sid W.; Taylor, D.R.F., ed.; Canada. Statistics Canada. Carleton University. Department of Geography, Ottawa, Ont.. **Issues on exchanging spatial systems technology,** 0-7709-0007-0, (at: Proceedings of (a) Workshop on Current Issues in Geographic Data Processing) 1976 pp.79-91.

Abstract: Discusses systems technology exchange with respect to the system components which may be exchanged, methods and timing of exchange, and software standards for exchange.

Location: 19.

76.175

Wittick, R.I.; Michigan State University. Comp. Inst. Social Sci. Res. East Lansing, MI.. **Geographic computer system for analysis and graphic depiction of spatial point data,** (in: Geographical analysis, Vol.8, no.3) 1976 pp.319-328.

Location: 20,28,36.

76.176

Wood, Peter M.; University of California. Lawrence Berkeley Laboratory. **Interactive thematic mapping: A report,** LBL-5362, CONF-7608103-1, (at: Meeting of the Urban and Regional Information Systems Associations).

Abstract: An interactive thematic mapping program is being developed which emphasizes base file dictionaries, interactive techniques, and a data management interface. The data base variables are stored in an explicitly inverted structure, fast access to a particular variable is thereby provided across all geo-regions. Built to aid choropleth map design, the programme is device independent and part of a larger information system.

76.177
Wunderlich, Gene; **Field notes on a small information system**, (at: Forsyth County Land Records System Workshop) 1976, Mar..
Abstract: Describes the land record system in operation in Rappahannock county, Virginia. The Rapli-II systems contains data on land ownership, land transfer, property tax, and land use.

76.178
Wytock, David M.; Grace, Barbara F.; **Computer assistance for planning school attendance boundaries**, (at: 1975 URISA proceedings, Volume 2) (Urban and Regional Information Systems Association) 1976 pp.267-281.
Abstract: Explains how several computer based tools were used to aid a school district to reorganize its attendance boundaries. The particular computer tools are a geographic base file for locating events, a method for displaying geographic events using a line printer, and a sophisticated interactive graphic system for both analysis and display of geographic related information. Describes the tools, and process of applying them to a specific school attendance area problem and presents observations on the usefulness of the interactive graphics system. Finally, additional tools which are being used in four other school districts are described.

76.179
Ziemann, Hartmut; **Geodetic referencing of location and the use of coordinates in a land data system for the Massachusetts Land Records Commission**, (National Research Council of Canada) 1976, Mar.1.
Location: 01.

76.180
Ziemann, Hartmut; **Land Unit identification - An analysis**, (National Research Council of Canada) 1976.
Location: 01.

76.181
Ziemann, Hartmut; **Requirements of a land data management system**, (at: Proceedings of the Land Records Symposium) (University of Maine) 1976 pp.41-65.
Abstract: After a brief discussion of governmental requirements for land-related data, the selection of a base land unit and land unit labelling, indications for statutory changes required for the establishment of land data management systems (land parcel cadastres) are given. These changes are the introduction of compulsory registration, improvement to deed recordation, tract index, title registration, a certain separation of ownership and boundary data, a re-evaluation of boundary evidence and modifications to existing land use regulations. In addition, the following technical requirements for a land data management system - a system of ground markings, accuracy standards, a system for recording survey data and a system of maps are also discussed.
Location: 07,18.

76.182
Zobrist, Albert L.; **Elements of an image-based information system**, (at: Proceedings Caltech/JPL Conference on Image Processing Technology, Data Sources and Software for Commercial and Scientific Applications) (California Institute of Technology) 1976, Nov. pp.3-5, JPL SP 43-30.

76.183

Zudina, A.B.; Oleinikov, A.Ya.; **Some aspects of the development of a system for automatic compilation of geological maps**, (in: Automat. Control and computer sciences, Vol.10, no.6) 1978 pp.56-58.

Abstract: Considers the need for processing and plotting of large files of geological data, and for formulation of basic technical requirements on a system that would automate process of compiling geological maps. Discusses the organizational structure, hardware and the corresponding control, interaction, processing, and output programmes in the system.

Location: 20,28.

76.184

City's topographic mapping system saves time, money, and is more accurate, (in: Civil engineering ASCE, Vol.46,) 1976, Sept. pp.98-100.

Abstract: Facing a costly and time-consuming mountain of planning, sewer, water, street and annexation projects in 1973, Elgin, Illinois became one of the first cities to purchase its own topographic mapping system. Now, three years later, the results are encouraging. Private consultant costs have been sharply curtailed. Planning and construction time has been substantially shortened. Long-ranged planning accuracy has been measurably improved.

Location: 05,09,13,20,21,23,28.

76.185

Composite computer mapping: Becoming a tool in search for energy sources, (in: Atom-U.S., Vol.13, no.6) 1976, Nov. - Dec. pp.18.

Abstract: Describes the generalized map analysis planning system, a specific, computer-assisted Geo-information system developed by the Colorado school of mines. The method involves drawing maps on transparent overlays on which values are represented by graduated or colored shadings that indicate the value of a particular factor within a given geographical area. These factor maps may be overlaid on a base map, and optimal areas may be located visually.

Location: 21.

76.186

Energy Information Act: Part I, (at: United States Senate Committee Int. Insular Affairs Hearings 94 Con. 2 Serial 94-31).

Abstract: Transcripts of hearings held on US. Energy Information Act, S. 1864, A bill to establish an energy information admin. and energy information system. Issues discussed included: the right of the public to know, the need for accurate information, and the legitimate desire of companies to protect valuable geological information. Testimony was received from journalists, academics, congressmen. Officials of ERDA, FPC, FEA, and USDI, and representatives of state governments and public interest groups. Responses by FEA and FPC to questions raised at the hearing and comments on S. 1864 by other federal departments and agencies are transcribed.

76.187

Mapping soils with ALice, (in: Optical spectra, Vol.10, no.4) 1976 pp.26-27.

Location: 20.

76.188

Proceedings of the Land Records Symposium. University of Maine. Aug. 25-27, 1976, (University of Maine) 1976.

Abstract: Collection of papers which concerns issues in cadastres and cadastral systems including economics, impact of automation, data referencing and cadastral maps. Also discusses suggestions as to how such systems can be developed and implemented.

Location: 07,18.

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77.001

Adams, N.J.; Vocar, J.M.; Losch, K.; Goodyear Aerospace Corporation, Akron, OH.. **Associative array processing of raster scanned data for automated cartography 2 (improved resolution and data handling). Final technical report May 76-Oct. 77,** AD-A049 698/4ST, GER-16523,.

Abstract: The primary objective of this effort was to: expand the existing STARAN cartographic raster processing capability from 4-mil in/out processing to 4-mil input with 4-mil output, 2-mil input with 2-mil output, and 1-mil input with 1-mil output, expand the I/O capabilities to include processing of ETL run-length-coded data and DMA run-length-coded data, and perform some initial investigation of contour tagging techniques. These modifications were based on the processing of map overlays up to 19 x 22 inches (data area), and include the capability to generate those symbols previously provided at 4-mil (only) processing.

77.002

Affleck, Sheldon; **Impact study on phase 1 and phase 2 of the LRIS programme. Draft copy,** (Council of Maritime Premiers. Land Registration and Information Service) 1977, Apr..
Location: 39.

77.003

Albee, W.; Mahan, R.; Mahoney, R.; **Topographic analysis system,** (United States. Department of Agriculture. Forestry Service) 1977, June.

77.004

Alberta. Treasury. Bureau of Statistics. **Inventory and index Alberta land related data bases,** (Alberta Treasury) 1977.
Location: 01.

77.005

Aldred, P.J.; Gerritsen, J.G.; Harrison, Derrick G.; Piepgrass, E.B.; City of Calgary. Management Systems Development Department. **Status and future of geocoding in Calgary, Preliminary Report. Project 4-4,** (City of Calgary) 1977, Sept..

Abstract: Describes the City of Calgary's geocoding procedures and processing, applications of geocoding and the development and maintenance of a geographic reference system.

Location: 01.

77.006

Almy, Richard R.; **Cadastres in property tax administration,** (at: Proceedings of the 43rd Annual meeting of the American Society on Photogrammetry, held in conjunction with the 37th American congress on Surveying and Mapping meeting, Washington D. C.) (American Congress on Surveying and Mapping) 1977.

77.007

Anderson, K. Eric; Guptill, Stephen C.; Hallam, Cheryl A.; Mitchell, William B.; **Developing and using a geographic information system for handling and analyzing land resource data,** (in: Remote sensing of the electro magnetic spectrum (RSEMS), Vol.4, no.4) 1977 pp.67-83.

77.008

Angelici, G.L.; Bryant, Nevin A.; Friedman, S.Z.; **Techniques for land use change detection using landsat imagery**, (at: Proceedings of Fall ASP-ACSM Convention).

77.009

Antill, Paul; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Intermediate-scale mapping program. Paper 77-249**, (at: 43rd Annual Meeting of the American Society on Photogrammetry, held in conjunction with the 37th American Congress on Surveying and Mapping Meeting) (Am. Soc of Photogramm. and American Congress on Surveying and Mapping) 1977.

Abstract: Concerns the intermediate scale (1:24000 to 1:750,000) maps produced by the U.S. National Mapping Program, and the use of the maps by State and federal agencies. Discuss the proposed coding of map data for reading-digitization with automated scanning equipment.

77.010

Armstrong, D.W.; Wetherby, K.G.; Moore, Alan W., ed.; Bie, Stein W., ed.; Australia, Department of Agriculture. **Computer assistance in the preparation of a detailed soil survey of the Padthaway irrigation area**, 90-220-0638-7, (at: Uses of soil information systems. Proceedings of the Australian Meeting of the ISSS Working Group on Soil Information Systems) (Centre for Agricultural Publishing and Documentation) 1977 pp.44-50.

Abstract: A computer has been used in the collation and analysis of field data for construction of a detailed soil map of about 12000 ha. Field data were recorded on specially designed forms to allow direct transfer to punch cards. Obvious errors and omissions in the data were detected by validation programmers and corrected where possible. Additional programmes were written to retrieve information from the profile descriptions, to classify profiles using specific factors, and to map the distribution of profile types.

Location: 20.

77.011

Arnold, J.G.; Lipsett, F.R.; Watkin, J.E., ed.; Canada. National Research Council. **Geographically-based interactive crime analysis**, (at: Proceedings of the Workshop on Mapping and Related Applications of Computers to Canadian Police Work) (National Research Council of Canada) 1977 pp.93-105.

Abstract: A software package under development at NRC in conjunction with the Ottawa police force is described. The police planner will be able to query data on calls for service stored on a magnetic tape. The data will be displayed on-line on a simplified street map of the urban area together with a statistical summary.

77.012

Arnold, S.G.; Douglas, David H.; Canada. National Research Council. Division of Electrical Engineering. University of Ottawa. Department of Geography and Regional Planning. **Geographic information processing for police resource allocation**, (at: Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Capital Geographic Information Processing Group) (Department of Geography and Regional Planning, University of Ottawa) 1977 pp.25-29.

Abstract: Summarizes a project, which attempts to increase the efficient utilization of the resources in a police department. Covers some aspects of computer modeling, analyses and mapping, as well as the beginning of the implementation of an interactive package.

Location: 01.

77.013

Baer, John; Anochie, Ononeze M., ed.; City of New York, Department of City Planning. International City Management Association. Management Development Center. N.Y.C. **Local area planning database,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association.) (Urban and Regional Information Systems Association) 1977 pp.312-322.

Abstract: Describes a data base developed by New York City for planning applications. Discusses geocoding, file structures and user services.

Location: 07.

77.014

Barrow, Harry G.; Stanford Research Institute, Menlo Park, CA.. **Interactive aids for cartography and photo interpretation. Semiannual technical report. 12 Nov 76 - 12 May 77,** AD-A043 418/3ST,.

Abstract: This report describes the status of the SRI Image understanding project at the end of twelve months. The central scientific goal of the research programmers to investigate and develop ways in which diverse sources of knowledge may be brought to bear on the problem of interpreting images. The research is focused on the specific problems entailed in interpreting aerial photographs for cartographic or intelligence purposes. A key concept is the use of a generalized digital map to guide the process of image interpretation.

Location: 17.

77.015

Basoglu, Umit; Morrison, Joel L.; University of Wisconsin. Cartographic Laboratory. **Efficient hierarchical data structure for the U.S. historical county boundary file,** (at: Proceedings of the American Congress on Surveying and Mapping. Fall Technical Meeting) (American Congress on Surveying and Mapping) 1977 pp.31-53.

Abstract: Concerns the file structures of a data base of boundary data, and discusses how these structures relate to the digitizing, data editing and data retrieval stages. Includes output examples.

Location: 05.

77.016

Bathke, William L.; **CAMRAS-Computer Assisted Mapping and Records Activity Systems,** (at: International Public Works Congress and Equipment Show) 1977.

77.017

Battle, Joyce E.; University of Wisconsin. Department of Geography. **Coding and interpolation of topographic surface,** (at: Proceedings of the American Congress on Surveying and Mapping, Fall Technical Meeting) (American Congress on Surveying and Mapping) 1977 pp.288-300.

Abstract: Describes an experiment to compare two data sampling techniques to provide machine readable data for isarithm maps.

Location: 05.

77.018

Baxter, R.A.; **Digital data base for British local authority boundaries,** (in: Area, Vol.9, no.2) 1977 pp.105.

Location: 20, 28.

77.019

Beck, Bruno; Broglie, James (Major); Vonusa, Richard; Opalski, William E.; Rome Air Development Center, N.Y.. **Voice data entry for cartographic applications,** (at: Proceedings of the American Congress on Surveying and Mapping. Fall Technical Meeting) (American Congress on Surveying and Mapping) pp.1977.

Abstract: Describes an automatic speech recognition system for entering spoken mapping data, and the set of tests used to evaluate the system. Outlines future plans and recommendations for audio input.

Location: 05.

77.020

Bender, Lee Uhrig; State University of New York. School of Environmental and Resource Engineering, Syracuse N.Y.. **Consequence analysis of land data systems,** (at: Proceedings of the American Congress on Surveying and Mapping. Fall Technical Meeting) (American Congress on Surveying and Mapping) 1977 pp.259-265.

Abstract: Presents a framework for evaluating the long term impacts of cadastral systems. Discusses physical, social, legal and technological impacts.

Location: 05.

77.021

Bennett, Howard C.; Aerial Data Reduction Associates, Inc., Pennsauken N.J.. **Geographic data base - Reliability or chaos,** (at: Proceedings of the American Congress on Surveying and Mapping. 37th Annual Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.675-680.

Abstract: Considers the need for greater data accuracy in mapping data bases

Location: 05.

77.022

Bie, Stein W., Ed.; **Relevant data structures,** 1, (Commission on Storage, Automatic Processing and Retrieval of Geological Data (COGEODATA)) 1977, Oct..

77.023

Betler, John R.; Martin, John D.; Eastern Field Operation Center. **Computer graphics demonstration-Area coal availability studies,** PB-267 923/1St, BUMINES-IC-8736, (series: U.S. Bureau of Mines information circular), (United States. Bureau of Mines) 1977.

Abstract: Describes an automated mapping system developed to provide procedures for the rapid and inexpensive display of coal reserve data. Mapping system output consists of two types of maps, point distribution and contour which can be produced for data associated with a point location. These locations can be in the form of latitude and longitude or Universal Transverse Mercator (UTM) grid coordinates. This system enables the display of a rapidly changing data base and computerized map generation without the intermediate steps of digitizing and overlaying to produce base maps. The mapping system is applicable to any regional mineral reserve or resource study for which point location data are available.

Location: 17.

77.024

Blakemore, Michael J.; Reeve, D.E.; **CHORO: choropleth mapping by computer,** 1, (series: Technical working papers), (University of Manchester. North West Industry Research Unit.) 1977.

77.025

Blakemore, Michael J.; Lloyd, P.E.; **Interactive computer graphics on medium-powered systems: Applications in thematic cartography,** (at: Proceedings of the Meeting of the Society of Photo-Optical Instrument Engineering) 1977 pp.317-323.

77.026

Bottini, Nicholas A.; Opitz, Bruce K.; Synectics Corp.. **Distributive processing applied to cartographic production systems,** (at: Proceedings of the American Congress on Surveying and Mapping, 37th Annual Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.711-731.

Abstract: Discusses a method for design of an automated mapping system using distributive processing. Also considers the benefits of phased implementation of such a system.

Location: 05.

77.027

Boyle, A. Raymond; Tomlinson, Roger F., ed.; University of Saskatchewan. Department of Electrical Engineering, Saskatoon, SASK.. **Automatic line digitization,** (at: Proceedings of the Commission on Geographical Data Sensing and Processing) (International Geographical Union. Commission on Geographical Data Sensing and Processing.) 1977 pp.53-61.

Abstract: Describes the results of a test of the ability of the CALSPAN Automatic Line Follower to digitize existing maps. Provides details with respect to cost, number and types of errors, and resolution of maps.

Location: 01.

77.028

Brassel, Kurt E.; Utano, Jack J.; Hanson, P.O.; **Buffalo Crime Mapping System: A design strategy for the display and analysis of spatially referenced crime data,** (in: Computer graphics, SIGGRAPH-ACM, Vol.11, no.2) 1977, July pp.78-85.

77.029

Brassel, Kurt E.; State University of New York at Buffalo. **Survey of mapping software,** (at: Proceedings of the American Congress on Surveying and Mapping. 37th Annual Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.509-515.

Abstract: Provides an overview of the IGU software survey, develops a classification scheme for mapping software and summarizes the major contents of the software inventory.

Location: 05.

77.030

Brassel, Kurt E.; Hanson, P.O.; Jarvis, R.; Marble, Duane F.; **Urban crime patterns, Handling of space and time dependent data: Three examples from geography,** (State University of New York at Buffalo. Geographic Information Systems Laboratory) 1977.

Abstract: Discusses the use of police computer files on crime for research and analysis of spatial and temporal patterns of urban crime. Utilizes Buffalo, N.Y., Police Department information as an example and describes data manipulation and data analysis techniques, and appropriate file structures.

77.031

Brice, William C.; Robinette, Alan D.; Minnesota. Department of Natural Resources, St. Paul, MN.. **Computer-aided regional planning for mineral resources,** (at: Applications of computing methods in the mining industry. Proceedings of the 14th Symposium) (AIME, Society of Mining Engineers) 1977 pp.383-394.

Abstract: Concerns an information system for mineral resource planning applications which uses a data base of natural and cultural information for analysis of environmental, land use and mineral resources considerations. Discusses the use of automated mapping for data display and evaluation.

77.032

Brown, Jeff; Wellar, Barry S., ed.; Mid-Ohio Regional planning commission, Columbus OH.. Canada. Ministry of State for Urban Affairs. **Geocoding with Mini-Match-A transportation experience,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3. Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.349-359.

Abstract: Tests the applicability of the Geographic Base File (GBF) to transportation planning. The GBF Applications Project was designed to geocode address information from various data files using a mini-computer, GBF/DIME file, and the newly developed MINI-MATCH software. The report details the testing procedures, technical file analysis, and possible data uses.

Location: 18.

77.033

Bryant, Nevin A.; Zobrist, Albert L.; California Institute of Technology. Jet Propulsion Laboratory. Pasadena, CA.. **IBIS: A geographic information system based on digital image processing and image raster data type,** (in: IEEE Transactions on geoscience electronics, Vol.GE-15, no.3) 1977, July pp.152-159.

Abstract: A system is presented that makes use of digital image processing techniques to interface existing geocoded data sets and information management systems with thematic maps and remotely sensed imagery.

Location: 01,20,23,28,37.

77.034

Buckner, R. Ben; Ohio State University. Department of Geodetic Science. **Computer coding of environmental surveying data,** (at: Proceedings of the American Congress on Surveying and Mapping. 37th Annual Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.548-565.

Abstract: Describes the mechanics of data encoding of environmental data, as well as possible planning applications for urban and regional areas.

Location: 05.

77.035

Butler, Kent S.; Gates, William A.; McCown, Brent H.; University of Wisconsin. Institute for Environmental Studies. **Resource data management system, GRASP: description of a land resource data base,** PB-294 550/9 ST, IES-88, RF/MONO-76/11,.

Abstract: The development of a spatially oriented land resource data base and the major steps in compiling, encoding, and accessing the data are fully documented so that other investigators and prospective users and use this report as a reference manual. The data base consists of 126 resource variables, describing the topography, soils and geology, coastal features, vegetation, hydrology, and land use/ownership of a region along the Wisconsin Lake Superior shore. The data base is called RIPA (Resource Information for Planning and Analysis). RIPA was encoded and manipulated in a grid-cell format using the computer-based land resource data system, GRASP.

Location: 17.

77.036

Butler, Kent S.; McCown, Brent H.; Gates, William A.; **Use of a computer-based resource data system to evaluate on-site waste disposal alternatives,** (in: Journal of soil and water conservation, Vol.32, no.5) 1977 pp.214-219.

Location: 05,10,20,28,32,34.

77.037

Bydler, Roger; Nilsson, Alf; National Swedish Road Administration. **Swedish road data bank and its use in road planning,** (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.68-84.

Abstract: Discusses a data bank for the storage and retrieval of data on road networks. Considers data referencing, information content of the data bank, and updating. Emphasis on the use and importance of a data bank in road planning.

Location: 15.

77.038

Calkins, Hugh W.; Tomlinson, Roger F., ed.; International Geographical Union. Commission on Geographical Data Sensing and Processing. **Geographic information systems, methods and equipment for land use planning, 1977,** PB286 643/2ST, 1977, Aug..

Abstract: This is a detailed text on geographic information systems. It is written for personnel who provide technical support to land and resource planners. The emphasis is on geo-based support systems rather than policy or regulations. The report describes both manual and computer aided systems, equipment, data considerations (quantity, reliability, accuracy, resolution), costs, systems design, implementation strategies, institutional considerations, and data sources. Examples

are drawn primarily from U.S. State and regional systems but with some references to Canadian, West European, and developing countries' systems.
Location: 17.

77.039
Calkins, Hugh W.; **Information systems in practice: Recent examples in North America. Chapter seven, Information/Data handling for regional land use planning and development (Chapter 7),** (UNESCO Press).
Abstract: Reviews a selection of five American state or regional planning applications of GIS in terms of user needs and technical capabilities
Location: 01.

77.040
Calkins, Hugh W.; Tomlinson, Roger F., ed.; State University of New York at Buffalo. Department of Geography. **Information system developments in North America,** (at: Proceedings of the Commission on Geographical Data Sensing and Processing) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1977 pp.93-113.
Abstract: Identifiers the main approaches to the development of GIS and compares four GIS (CGIS, PIOS, LUNR, and ORRMIS) with respect to digitization, data structures, and data volumes capacity.
Location: 01.

77.041
Calkins, Hugh W.; **Introduction to geographic information systems. Chapter two, Information/Data handling for regional land use planning and development,** (UNESCO Press).
Abstract: Concerns the design and development of a GIS with respect to data acquisition, data manipulation, and data analysis in terms of economics, time constraints, user needs, and data availability.
Location: 01.

77.042
Callaham, Robert Z.; Verke, Theodor B.; Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.. **Evaluation of PACFORNET (Pacific Coast Forest Research Information Networks). Final report,** PB-274 460/5ST,.
Abstract: This report evaluates the views of 852 users of PACFORNET, analyzes services rendered, current and potential users, and costs and financing, and lists recommendations. It is based upon the report of the PACFORNET Evaluation Team, the conclusions and recommendations of the PACFORNET Executive Review Team, with additional fiscal and management data on PACFORNET operations.
Location: 17.

77.043
Canada. Department of the Environment. Lands Directorate. Land Data Systems Division. **Canada Geographic Information System (CGIS) -An overview,** (series: Canada Land Data System), (Canada. Department of the Environment) 1977, Feb. .
Abstract: Presents an overview of the purpose and development of the CGIS, a system designed to store, manipulate and analyse geographic data. Provides a description of the system.
Location: 01.

77.044
Central Intelligence Agency. **CAM-Cartographic Automatic Mapping program documentation. 5th edition,** PB-270 304, CIA/DF-77 006A, (Central Intelligence Agency) 1977.
Location: 17.

77.045

Chatterton, William A.; Clapp, James L.; Epstein, Earl F.; Niemann, Bernard J. Jr.; **Incremental implementation of a modern multi-purpose cadastral system,** (at: Proceedings of the American Congress on Surveying and Mapping. 37th Annual Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.694-709.

Abstract: Examines the need for multipurpose cadastral systems and proposes incremental system development modernize land information systems.

Location: 05.

77.046

Chrisman, Nicholas R.; **Local versus global - The scope of memory required for geographic information processing,** 76-17, (series: Internal reports), (Harvard University. Laboratory for Computer Graphics and Spatial Analysis) 1977.

77.047

Chrisman, Nicholas R.; **Semantics of an interactive editor,** (at: Proceedings of an Advanced Study Symposium on Topological Data Structures for Geographic Information Systems) 1977.

77.048

Christiansson, Gerth; Malmo Municipality, Malmo, Sweden. **Geocoded data system of the municipality of Malms,** (in: Canadian cartographic: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.99-103.

Abstract: Presents a system description of an urban information system in terms of data referencing and file structures, data retrieval and data display.

Location: 15.

77.049

Chrzanowski, Adam; Thomson, D.; University of New Brunswick. Department of Surveying and Engineering. **Maritime cadastral accuracy study. Final report,** (Council of Maritime Premiers. Land Registration and Information Service) 1977, Mar..

Abstract: Evaluates cadastral surveying practices, discusses theoretical principles of accuracy in spatial data referencing, achievable data accuracy, and required accuracy, and suggests levels of accuracy for the LRIS.

Location: 01.

77.050

Cicone, Richard C.; Environmental Research Inst. of Michigan. **Remote sensing and geographically based information systems,** (at: Proceedings of the 11th International Symposium on Remote Sensing of the Environment) (Environmental Resources Institute of Michigan) 1977 pp.1127-1136.

Abstract: Reviews some concepts that distinguish geographic information systems and proposes a simple model which can serve as a conceptual framework for the design of a generalized geographic information system.

77.051

Clapp, James L.; **Incremental implementation of a modern multi-purpose cadastral system,** (at: Proceedings of the American Congress on Surveying and Mapping) (American Congress on Surveying and Mapping) 1977.

77.052

Clapp, James L.; Niemann, Bernard J. Jr.; University of Wisconsin at Madison. Environmental Monitoring and Data Acquisition Groups. **North American land information systems: An overview with recommendations,** (at: 15th International Congress of Surveyors).

Abstract: Includes an overview of (1) land information integrating mechanisms being attempted by various state units of government, (2) an overview of attempts in North America of developing and implementing information systems and (3) a brief overview of attempted uses of the information systems in land planning and management. Reviews the reasons for system failure and provides examples. Presents concepts which must be considered if land information systems in North America are to be useful and meet society's needs. Includes a list of the systems cited.

Location: 01.

77.053

Clark, Allen L.; **Guidelines for international data collection and resources assessments and analyses,** (in: Journal of the International Association for Mathematical Geology, Vol.9, no.3) 1977 pp.221-233.

Location: 02.

77.054

Clark, James W.; Washington University. Urban Transportation Program. **Interactive spatial analysis and display system. Research report July '76 - June '77,** PB-280 693/3ST, RR-77-4, (Washington University. Urban Transportation Program) 1977, July.

Abstract: This paper presents a philosophical discussion of analysis needs when data bases with spatial components are available. A tool, the Interactive Spatial Analysis and Display System (ISADS), has been constructed to aid these needs, and example applications are presented herein to illustrate the use of this tool. ISADS is a computer system designed to aid the experimental, interactive analysis of spatial data. 'Experimental, interactive analysis' involves data base browsing, heuristics, and hypothesis formulation and testing conducted in a real time mode using a graphic display terminal. The use of graphic displays as a powerful device for discovering spatial relationships has been fully exploited in ISADS. ISADS is a general-purpose system that can be used with a variety of data base types. If a cartographic data base is available, then a variety of types of map overlays is possible, further enhancing the spatial analysis capability. User communication with ISADS is by means of an easily learned, English-language type command structure. The stystem takes advantage of a commercially available data base management system (DBMS) to simplify the creation, updating, and maintenance of the data base. The DBMS supports a general purpose programming language interface which permits development of new applications within ISADS.

Location: 17.

77.055

Classen, Ronald J.; University of Arkansas, Fayetteville, AR. **Introduction to geographic information systems,** (in: Computers and industrial engineering, Vol.1, no.2) 1977 pp.131-138.

Abstract: Defines a geographic information system, explains some terms associated with geographical or spatial data, and discusses methods of organizing such data for flexible and efficient retrieval. Reviews the analysis possibilities available using spatial data including computer mapping and other nongraphic analyses such as correlation and regression, descriptive spatial statistics, trend surface analysis, cluster analysis, and network analysis. Potential applications of geographic information systems are presented including their use in the areas of public health, resource management and public safety.

Location: 17.

77.056

Coiner, Jerry C.; Anochie, Ononeze M., ed.; Columbia University. Department of Geography, New York, N.Y.. International City Management Association. Management Development Center. **Geographic information systems in development planning,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.470-476.

Abstract: Presents a geographic information system, designed specifically for a Third World site, Marinduque Island, Republic of the Philippines, as an example of how geographic data sensing can be used to monitor development. The system is intended to enhance development planners' ability to identify spatial dynamics inherent in the development process and to monitor relationships between infrastructure changes and other landscape components such as land use. These capabilities were demonstrated with Marinduque data and are reported in brief here.

Location: 07.

77.057

Cook, B.G.; Moore, Alan W., ed.; Bie, Stein W., ed.; CSIRO. Division of Land Use Research, Canberra, Australia. **Land resource information systems: Use and display,** 90-220-0638-7, (at: Uses of soil information systems. Proceedings of the Australian Meeting of the ISSS Working Group on Soil Information Systems) (Centre for Agricultural Publishing and Documentation) 1977 pp.37-44.

Abstract: Examines and comments on some problems and techniques in using and displaying computer-stored land resource data, and discusses data quality and data organization.

Location: 20.

77.058

Cook, G.C.; Mayo, K.K.; CSIRO. Division of Land Use Research, Canberra, Australia. **Geographic data base using FORDATS,** (in: Australian computer journal, Vol.9, no.4) 1977, Nov. pp.145-149.

Abstract: Describes the design, establishment and use of a geographic data base using the fordata data base management package. The data base, established as a research tool in a land use planning study, has been in continuous use for two years

Location: 09, 20.

77.059

Cook, Robert N.; University of Cincinnati, OH.. **Multipurpose land data system legal parcel,** (in: Photogrammetric engineering and remote sensing, Vol.43, no.6) 1977 pp.757.

77.060

Cooke, Donald F.; Geoprocessing Sciences, Corinth, VT.. **Cadastral geoprocessing. Paper 77-245,** (at: Proceeding of the 43rd American Society on Photogrammetry, held in conjuction with the 37th American Congress on Surveying and Mapping Meeting) (Am. Soc. of Photogramm and American Congress on Surveying and Mapping) 1977.

Abstract: Describes how a Cadastral Geoprocessing System would look to users and programmers, then presents a conceptual model of many agencies sharing the computerized cadastral map base through a network of minicomputers. Points out that most problems associated with spatial referencing in the cadastre disappear if computer geographic data referencing were used.

Location: 05.

77.061

Cormack, R.S.; Moore, Alan W., ed.; Bie, Stein W., ed.; Queensland. Department of Primary Industries, Brisbane, Australia. **Data delineation and computer techniques for line printer mapping and tabulation,** 90-220-0638-7, (at: Uses of soil information systems. Proceedings of the Australian Meeting of the ISSS Working Group on Soil Information Systems) (Centre for Agricultural Publishing and Documentation) 1977 pp.58-66.

Abstract: Discusses concepts for the delineation and processing of area data for line-printer mapping by computer. The processing of point data is also discussed.

Location: 20.

77.062

Council of Maritime Premiers. Land Registration and Information Service. Canada. Department of Regional Economic Expansion. **Five year joint DREE/LRIS evaluation of LRIS programme,** (Council of Maritime Premiers. Land Registration and Information Service, Canada. Department of Regional Economic Expansion) 1977, Aug. 2.

Abstract: Provides the background to the development of the LRIS programme, describes and evaluates each phase of the programme in terms of progress achieved, economics, and user concerns, and considers the impact of the programme on the Maritimes.

Location: 01.

77.063

Council of Maritime Premiers. Land Registration and Information Service. **General planning and progress guide,** (Council of Maritime Premiers. Land Registration and Information Service) 1977, Sept. 30.

Abstract: Discusses the current (1977) status of the four phases of the LRIS programme and project activities for the following year.

Location: 01.

77.064

Council of Maritime Premiers. Land Registration and Information Service. **Proceedings of the Workshop on Cadastre - based Land Information Systems, Fredericton, N.B. June 27-29, 1977,** (Council of Maritime Premiers. Land Registration and Information Service) 1977.

Location: 01.

77.065

Cox, T.L.; South Dakota State University, Brookings, S.D.. **Integration of land-use data and soil survey data,** (in: Photogrammetric engineering and remote sensing, Vol.43, no.9) 1977, Sept. pp.1127-1133.

Abstract: Remotely sensed land-use data were digitized and registered with digitizied soil survey data to provide quantitative information for resource planning.

Location: 05,10,20,21,23,27,28,32,36.

77.066

Craig, William James; Wellar, Barry S., ed.; University of Minnesota. Center for Urban and Regional Affairs. Canada. Ministry of State for Urban Affairs. **Land records and computer assisted assessment,** (at: Information system inputs to policies, plans and programs/ URISA 1977. Volume 3. Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.389-395.

Abstract: Summarizes the results of phase one, conceptualization, of a Minnesota state supported project in 'Land Records and Computer Assisted Assessment'. The objectives of that phase were to look at the state of the art on the one hand and the needs of Minnesota counties on the other, then come up with a development strategy at the county level that could be supported by the state. The conclusion is that emphasis should be placed on computerizing the assessor's land data which is of major interest to planners, analysts, and administrators.

Location: 01.

77.067

Dangermond, Jack P.; Grinnell, H.W., Jr.; Anochie, Ononeze M., Ed.; Environmental Systems Research Institute, Redlands, CA.. International City Management Association. Management Development Center. **Land use studies at Southern California Edison: The development and use of a land use oriented planning information system,** 0-916848-13-2, (at: Computers in urban and regional government/ Information systems as services to citizens/URISA 1976. Papers from the fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.427-441.

Abstract: Describes a land use-oriented planning information system for forecasting future electrical load growth for general facility planning and preparing environmental impact reports. Discusses the collection of land use data from high altitude imagery, automating this data using the PIOS system, conducting various area overlay and mapping studies, and incorporating this data into a generalized methodology for forecasting land use. Also discusses work with three county agencies in definition of a mutually usable data inventory and in establishing a joint sponsorship program. Considers possible additional areas of information system development that may become both possible and cost effective.

Location: 07.

77.068

Datlen, Andy R.; Wellar, Barry S., ed.; City of Toronto Management Services (Central Property Register). Canada. Ministry of State for Urban Affairs. **City of Toronto's Central Property Register or Everything you always wanted to know about your property, but were afraid to ask,** (at: Information system inputs to policies, plans and programs/ URISA 1977. Volume 3. Contributed papers. Papers from the fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.123-133.

Abstract: Concerns the City of Toronto's Central Property Register, particularly data referencing and file structures using the Ontario Coordinate System for location identifiers to produce a Master Address File.

Location: 18.

77.069

Davenport, Russell, ed.; Illinois Coasted Zone Management Program. **Proceedings, Lake Michigan Information Symposium, Oct. 11-12, 1977,** PB-285 619/3ST, NOAA-78071405,.

Abstract: The Lake Michigan Information Symposium was held in Chicago, Illinois on October 11-12, 1977, 1977, to provide a forum for researchers, bureaucrats, and information specialists to discuss the desirability and feasibility of improving the accessibility of environmental information about the southern basin of Lake Michigan. The sessions were concerned with information sources and services, (with needs of resource managers and developers, with needs of environmental researchers,) and with information on the Utah experience. Following group discussions, one session dealt with information brokerage and networking.

Location: 17.

77.070

Davey, P.G.; Harris, J.F.; Preston, G.; **Automatic boundary digitising for the Department of Environment,** (Oxford University) 1977.

77.071

Davis, Paul E.; Mississippi Research and Development Center. **Mississippi land resources inventory state land use mapping project**, (at: Proceedings of the American Congress on Surveying and Mapping Fall Technical Meeting) (American Congress on Surveying and Mapping) 1977 pp.104-115.

Abstract: Concerns the application of remote sensing data for land use mapping. Briefly describes the Automated Information System for handling the mapping data.

Location: 05.

77.072

Davis, Victor M., Jr.; City of Atlanta. Systems and Programming Division. **Georgia computer mapping program**, (at: Proceedings of the 43rd Annual Meeting of the American Society of Photogrammetry, held in conjuction with the 37th American Congress on Surveying and Mapping Meeting) (American Congress on Surveying and Mapping) 1977 pp.666-669.

Abstract: Outline the joint efforts of the City of Atlanta, the Georgia Power Company, the Atlanta Gas Light Company, the Southern Bell Telephone and Telegraph Company and the Georgia Department of Transportation in a computerized mapping programme. The programme utilizes the techniques of photogrammetry, the computer, line plotters and graphic video terminals. In addition to the advantages of a common grid and scale, the parties received the economic benefit of shared costs. Provisions were also made within the programme for computer update of the data base which produces the maps.

Location: 07.

77.073

Davis, Victor M., Jr.; City of Atlanta. Systems and Programming Division. **Georgia computer mapping program**, 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.500-503.

Abstract: Outlines the joint efforts of the City of Atlanta, the Georgia Power Company, the Atlanta Gas Light Company, the Southern Bell Telephone and Telegraph Company and the Georgia Department of Transportation in a computerized mapping programme. The programme utilizes the techniques of photogrammetry, the computer, line plotters, and graphic video terminals. In addition to the advantages of a common grid and scale, the parties received the economic benefit of shared costs. Provisions were also made within the program for computer update of the data base which produces the maps.

Location: 07.

77.074

Dawson, N.M.; Moore, Alan W., ed.; Bie, Stein W., ed.; Queensland. Department of Primary Industries, Brisbane, Australia. **Comparative costs of data handling in land resource surveys**, 90-220-0638-7, (at: Uses of soil information systems. Proceedings of the Australian Meeting of the ISSS Working Group on Soil Information Systems) (Centre for Agricultural Publishing and Documentation) 1977 pp.90-101.

Abstract: Describes an information system already in use and compares the costs of certain data handling aspects when carried out by hand and by computer.

Location: 20.

77.075

Dionne, P.J.; Erickson, M.D.; Hill, E.R.; Burnett, R.A.; Addison, L.E.; Battelle Pacific Northwest Laboratories. Richland, WA.. **Computer graphics capabilities at Battelle, Pacific Northwest Laboratories**, BNWL-SA-6499, CONF-7706144-1, (at: ERDA Graphics Conference).

Abstract: Some of the computer graphics capabilities at Battelle, Pacific Northwest Laboratories are discussed. Computer graphics philosophy, hardware systems, and software utilized by the Computers and Information Systems Section staff are described in an overview. Subsequent sections detail specific applications of these capabilities to research areas in which Battelle is involved.

Use of computer graphics in cartography, decision making, and resource assessment is documented.

77.076

Domsch, Ronald E.; Wellar, Barry S., ed.; Wyandotte County Base Mapping Program, Kansas City, KS.. Canada. Ministry of State for Urban Affairs. **Topological encoding of points in a cadastral mapping system,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.176-184.

Abstract: Focuses on the digitizing phase of a parcel level geographic base file which is currently under development in Wyandotte County, Kansas. A method of digitizing and encoding points without the use of node numbers is explained. The encoding of the points is topological. A DIME-type file of parcel boundaries is generated directly from the vertex file.

Location: 18.

77.077

Douglas, David H.; **Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Capital Geographic Information Processing Group,** (University of Ottawa. Department of Geography and Regional Planning) 1977.

Abstract: A collection of papers concerning GIS in planning applications, mapping programmes, and research.

Location: 01.

77.078

Downard, Allen F.; Anochie, Ononeze M., ed.; Polk County. Lakeland, FL.. International City Management Association. **How to deal with the geographic base system without a computer,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.480-484.

Abstract: Deals with manipulating geographic data while it stays in image form. The use of a Bausch & Lomb Zoom Transfer Scope can reduce the cost, time and energy needed in dealing with geographic data. The machine is described here and examples are given of how it has been used along with suggestions for future projects. Advantages and disadvantages are discussed.

Location: 07.

77.079

Drew, Joseph; Greenberg, Saadia; Jones, Bryan; Anochie, Ononeze M., ed.; Wayne State University. Department of Political Science, Detroit, MI.. International City Management Association. **Development of a data systems technology for assessing the geographic distribution of urban government services,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.323-335.

Abstract: Describes the development of a data systems technology for the analysis of the distribution of urban public services. The project merged data from agency records with Tract Level Census data to form a combined dataset suitable for analysis of the demographic, socio-economic, and geographic variations in the provision of services. Data was geocoded to Census Tracts using a variety of methods depending on the nature of the service. After merging agency records and Census data, the authors used multivariate statistical techniques for analysis

Location: 07.

77.080

Duda, Richard O.; Hart, Peter E.; Nilsson, Nils J.; Reboh, Rene; Slocum, Jonathan; Stanford Research Institute, Menlo Park, CA.. **Development of a computer-based consultant for mineral exploration. Annual report 1 Oct. 76 - 30 Sept. 77, PB-287 943/5ST,.**

Abstract: This report describes an evolving system of computer programs called PROSPECTOR that is intended to provide active consultation on problems of mineral exploration and resource evaluation. The system is able to accept field data provided to it by an exploration geologist, and from these data to postulate several alternative hypotheses about the presence of a possible ore deposit on the prospect. The system then requests additional data from the geologist, effectively suggesting additional observations that would be helpful in confirming or refuting the hypotheses. Upon request the system can summarize its interpretation of the data, estimate the likelihood of occurrence of a deposit, and answer certain questions related to the consultation session. The ability of PROSPECTOR to provide consultation rests on a 'knowledge base' of appropriately encoded models of a variety of ore deposits. These models are furnished to the system of a panel of expert economic geologists, and are intended to represent the best information currently available. The system is designed to accommodate the judgmental statements inherent in such models, and to reason about field data that are less than complete or fully certain.

77.081

Dueker, Kenneth J.; Zimmermann, R.H.; **Automated land use information system: Needs, possibilities, recommendations problems**, 87, (series: Technical report series), (University of Iowa. Institute of Urban and Regional Research) 1977, Jan..

77.082

Dueker, Kenneth J.; Talcott, Richard L.; Wellar, Barry S., ed.; University of Iowa. Institute of Urban and Regional Research. Canada. Ministry of State for Urban Affairs. **Incremental approach to the design of a geographic information system,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.298-305.

Abstract: Describes an incremental design history of geographic information system, which has evolved from specific applications and capability-building efforts at the University of Iowa.

Location: 18.

77.083

Dueker, Kenneth J.; Wellar, Barry S., ed.; University of Iowa. Institute of Urban and Regional Research. Canada. Ministry of State for Urban Affairs. **Information system inputs to plans: A review of the state-of-the-art,** (at: Information system inputs to policies, plans and programs/ URISA 1977. Volume 1 Plenary papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.68-81.

Abstract: Reviews use of information systems in planning, particularly URISA contributions to planning. For purposes of trying to understand the role of information systems in planning, two examples are used: The first being comprehensive land-use transportation planning and the second being impact assessment, i.e., in Environmental Impact Statements (EIS).

Location: 18.

77.084

Dutton, Geoffrey H.; **Navigating ODYSSEY**, (at: Proceedings of an Advanced Study Symposium on Topological Data Structures for Geographic Information Systems.) 1977.

77.085

Dyett, Michael V.; Metrolitan Transportation Commission, Berkeley, CA.. **Station area land use. BART impact program. Land use and urban development project**, PB-282 996/8ST,.

Abstract: The report summarizes time series data on BARTH stations compiled for the Land Use and Urban Development Project. Data collection and classification methods are described, and data sources are documentated. Station area land use changes during the period 1965-77 also are summarized .

77.086

Edson, Dean T.; Lee, George Y.G.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Land line survey data within a digital cartographic data base**, (at: Proceedings of the 43rd Annual Meeting of the American Society on Photogrammetry, held in conjuction with the 37th American Congress on Surveying and Mapping Meeting) (American Congress on Surveying and Mapping) 1977 pp.493-507.

Abstract: Presents an approach for establishing the public land survey as part of a mapping data base. Discusses geocoding, file structures, data retrieval software, and data sharing.

Location: 05.

77.087

Eklund, Olle; Stockholm County Council. Regional Planning Office. **GISA: A geographic - based information system**, (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.94-98.

Abstract: Considers a regional information system for planning applications. Briefly describes the system and details the range of applications and the information content of the data base.

Location: 15.

77.088

Ellis, Scott L.; Fallat, Colling; Reece, Nancy; Riordan, Carol; Ecology Consultants, CO.. **Guide to land cover and use classification systems employed by western governmental agencies**, PB-265 173-5ST, FWS/OBS-77/05, (United States. Fish and Wildlife Service) 1977, Mar..

Abstract: Classification systems used by U.S. state and federal agencies in 18 western states and the Canadian provinces of Alberta and Manitoba are listed. Classification systems are limited to those characterizing wildlife, land use, and terrestrial vegetation. A summary of each system includes the title, a contact person, the objectives and background. A brief description, and a list of the products (maps, inventories, publications, etc.). The data base and techniques required to implement each system are also described. The guide includes local systems. Regional and multi-regional systems, and some Canadian systems. Author and keyword indexes and a glossary of terms are included.

Location: 01,17.

77.089

Emery, K.A.; Lynch, L.G.; **Regional information system - Bathurst-Orange**, (in: Journal of the Soil Conservation Service of New South Wales, Vol.33, no.1) 1977, Jan..

77.090

Ericksen, R.H.; Wellar, Barry S., ed.; University of Iowa. Department of Geography. Canada. Ministry of State for Urban Affairs. **DIGIT SERIES: Interactive digitizing for education and research,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.316-324.

Abstract: Describes the various application packages in the DIGIT Series and discusses the range of possibilities interactive digitizing has for educational and research pursuits.

Location: 18.

77.091

Evangelatos, Tony; Douglas, David H.; Canadian Hydrographic Service. Cartographic System Maintenance and Development. University of Ottawa. Department of Geography and Regional Planning. **Nautical charting and the computer,** (at: Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Capital Geographic Information Processing Group) (University of Ottawa. Department of Geography and Regional Planning) 1977 pp.13-17.

Abstract: Shows how digital computer technology has affected the methods of Nautical Charting, explores these new techniques and briefly describes the Canadian Hydrographic Service and some of its products.

Location: 01.

77.092

Ewald, William R., Jr.; University of California at Santa Barbara. Community and Organization Research Institute. United States. Office of Economic Research. **Geocoding data for display and policy analysis. Volume 1. The potential of the ACCESS (Alternative Comprehensive Community Environmental Study System) process re: Energy, Environment and the Economy,** PB-237 031/5ST, EDA/OER-77/031, (University of California at Santa Barbara. ACCESS Project) 1977.

Abstract: The purpose of the interpretive report is to describe how the ACCESS process (Alternative Comprehensive Community Environmental Study System) might be applied in programmes of the Economic Development Administration. The body of Volume 1, is organized in five sections: (1) Definition of the ACCESS process (and the ACCESS Project), (2) ACCESS process potential for EDA programs, (3) field interviews in eight states indicating the extent to which the ACCESS process is understood, (4) a summary of the geocoding conference undertaken as part of this investigation (edited conference proceedings comprise Volume 2), and (5) conclusions and recommendations. The ACCESS Project is a national prototype study to facilitate policy-making at the regional (multi-state, state, multi-county) level. The ACCESS process proposes to facilitate people's access to data, to expertise, and to each other, and to increase peoples' capability to define and enhance the quality of life in their region as they perceive and determine it.

Location: 17,20.

77.093

Ewald, William R., Jr.; University of California at Santa Barbara. Community and Organization Research Institute. **Geocoding data for display and policy analysis. Volume 2. Technology from the user perspective. Proceedings of the Santa Barbara, CA. Conference taped at the ACCESS project, Lugo Adobe on May 8-10, 1977,** PB-273 032/3ST., EDA/OER-77/032, (University of California) 1977.

Abstract: The ACCESS Project is a national prototype study to facilitate policy-making at the regional (multi-state, state, multi-county) level. The ACCESS proccess proposes to facilitate peoples' access to data, to expertise, and to each other. The process incorporates various techniques to explain the short- and long-run impacts of public policy decisions. To store, select, retrieve and instantly display in mapped form the data essential to the regional policymaker for the mental modeling of policy issues requires the technique of geocoding. (Geocoding is the term for organizing and referencing social, economic or

physical data to its geographic location.) This volume is the proceedings of a conference on geocoding held at Santa Barbara, California, May 8-10, 1977.
Location: 17.

77.094
Fegeas, Robin G.; **Graphic input procedure - An operational line segment/polygon graphic to digitial conversion,** (at: Proceedings of Advanced Study Symposium on Topogical Data Structures for Geographic Information Systems) 1977.

77.095
Fegeas, Robin G.; Kewer, P.M.; **Transfer of land use and land cover and associated maps into digital format,** (in: Remote sensing of the electro magnetic spectrum (RSEMS), Vol.4, no.4) 1977 pp.55-66.

77.096
Findeis, John H.; Wellar, Barry S., ed.; Council of Maritime Premiers. Land Registration and information service. Canada. Ministry of State for Urban Affairs. **Provincial government perspective on intergovernmental roles in hardware/software development,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 2 Invited papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.6-14.
Abstract: The Council of Maritime Premiers, as an agency of three Canadian provinces, has been actively involved in fostering regional solutions to common provincial and municipal problems. Several different approaches are used to meet specific regional needs and a variety of problems is studied. A cross-section of the type of activities in which such agencies and the Council participate has been selected and the approach to solving regional questions has been described.
Location: 18.

77.097
Fox, John; York University. Department of Sociology. **Computer programme for geographic clustering,** 1, (series: Population Research Laboratory occasional paper), (University of Alberta. Department of Sociology. Population Research Laboratory) 1977, Mar..
Abstract: Describes GCLUSTER, software for data aggregation.
Location: 07.

77.098
Frankland, Phillip; Wellar, Barry S., ed.; University of Iowa. Department of Geography. Canada. Ministry of State for Urban Affairs. **Computer graphics systems: An example from Iowa,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.325-334.
Abstract: Describes briefly some of the computer graphics and mapping programs that have been utilized and developed in conjunction with a geographic information system.
Location: 18.

77.099
Frazier, Bruce E.; Lee, Gerhard B.; Bunde, Dennis; Washington State University. Pullman. **Effectiveness of a computer land use planning system for corridor selection,** 0308-1060, (in: Transportation Planning and Technology, Vol.5, no.3) 1979 pp.151-160.
Abstract: Spatial computer models were applied to a route location problem in eastern Wisconsin. Data included soil associations, land cover, slope, and land use stored by 1/9 km cells. Models were constructed to represent land use ideas supported by various sectors of society. Routes automatically selected by each model were plotted on a medium intensity soil map to test their effectiveness in avoiding prime agricultural land.

Location: 20,28.

77.100

Freeman, Herbert; Rensselaer Polytechnic Institute. Computer Research Laboratory, Troy, N.Y.. **Automatic data processing techniques for graphic-data display, generation and analysis. Interim report 1 Sept. 76 - 31 Aug. 77**, AD-A049 317/1ST, CRL-54,.

Abstract: This is an Interim Technical Report describing research carried out under Grant AFOSR 76-2937 during the 12-month period 1 September 1976 - 31 August 1977. The overall objective of the research programme is to make significant improvements in the state of the art relating to the extraction, representation and computer interpretation of line drawing data. Specific tasks during the reporting year were concerned with (1) the reconstruction of solid-object descriptions from multiple photographic projections, (2) the development of programmes for the removal of 'hidden lines' from the projection of both planar-faced and quadric-surface objects, (3) the design of a generalized chain coding scheme for the compact and precise description of map data, (4) the development of a line-drawing processing language, (5) an investigation into some new approaches to scale- and orientation-independent shape classification.

Location: 17.

77.101

Gaal, G.; Tontti, M.; Autio, H.; Lehtonen, M.; **Establishing a national ore data file in Finland,** (in: Journal of the International Association for Mathematical Geology, Vol.9, no.3) 1977 pp.319-325.

Location: 02.

77.102

Garth, S.L.; Wellar, Barry S., ed.; Burnaby Joint Utility Mapping Pilot Project, Burnaby, B.C.. Canada. Ministry of State for Urban Affairs. **Experience with computer-assisted mapping in Burnaby,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.335-348.

Abstract: Discusses the concept of computer-assisted mapping and facility data management, particularly as it applies to municipalities and utilities. The practical considerations of implementing this technology are outlined by reference to the Burnaby Joint Utility Mapping Pilot Project. This project is currently utilizing a fully-operational computer-assisted mapping system, to evaluate its effectiveness as a tool for creating and maintaining new base and facilities maps and a geographically-related information system, in a joint-agency environment.

Location: 01.

77.103

Gezann, Gary A.; Anochie, Ononeze M., ed.; Nous Research Corporation, Cleveland, OH.. International City Management Association. **Geocoded municipality-utility planning system,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.522-526.

Abstract: Describes a system which combines data from municipalities and utilities to facilitate better planning of construction within the street right-of-way. Planning data is combined with information on existing municipal and utility facilities for each census street segment. Because the data is geocoded, it will add an additional set of data to a regional information system which is presently being developed.

Location: 07.

77.104

Gill, D.; Beylin, J.; Boehm, S.; Frenkel, Y.; Rosenthal, E.; Israel Geological Survey. Geological Data Processing Unit, Jerusalem, Israel. **Design of geological data systems for developing nations,** (in: Journal of the International Association for Mathematical Geology, Vol.9, no.2) 1977 pp.145-147.
Location: 02.

77.105

Godfrey, Kneedland A., Jr.; **Making maps by computer,** (in: Civil engineering, Vol.1977, Feb.,) pp.37-45.

Abstract: For making maps digitized computer plotter systems are increasingly popular. Here are case histories of three applications by a gas utility for keeping track of 650 miles of distribution pipe and thousands of building service lines, by a small consultant for making subdivision maps, and by a state highway department for mapping 500 miles of highway a year. In all three cases significant reductions in cost of making maps have been achieved or are in prospect. However, not all civil engineering organizations using such systems have saved money, so we offer some guidelines to those thinking of purchasing such hardware or service

77.106

Gold, C.M.; Charters, T.D.; Ramsden, J.; **Automated contour mapping using triangular element data structures and an interpolant over each irregular triangular domain,** (in: Computer graphics, Vol.11,) 1977, June pp.170-175.
Location: 28.

77.107

Gold, C.M.; **Practical generation and use of geographic triangular element data structures,** (at: Advanced Study Symposium on Topological Data Structures for Geographic Information Systems papers) (Harvard University. Laboratory for Computer Graphics and Spatial Analysis) 1977, Oct..

77.108

Goodchild, M.F.; Wai-See, Moy; Tomlinson, Roger F., ed.; University of Western Ontario. Department of Geography. **Estimation from grid data: The map as a stochastic process,** (at: Proceedings of the Commission on Geographical Data Sensing and Processing) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1977 pp.67-81.

Abstract: Reviews mathematical methods for determining confidence limits on estimates of area and location and for determining probability of error, based on grid data. Includes methods for area calculation of boundary cells, empirical tests of error variance of areas, and methods of determining the probability of classification error within an assemblage of cells.

Location: 01.

77.109

Goodchild, M.F.; Ross, J.H.; Swanson, W.G.; **PLUS: A conversational regional planning tool,** 14, (series: Occasional paper), (Canada. Department of Fisheries and Environment. lands Directorate) 1977, Jan..

Abstract: PLUS consists of two separate parts, the first, PLUS/X, operates in polygon mode and carries out data preparation for the second part, PLUS/2, which is a grid system. PLUS/X requires an expert user and a large computer, while PLUS/2 can be used by a layman with access to a mini-computer. This paper sets forth the background which led to the development of PLUS, presents the logic which defined its hybrid nature, describes the principal functions of the system and presents nine practical problems and the steps necesary to resolve them through the use of PLUS.

Location: 01.

77.110

Goscombe, P.W.; Conhead, B.A.; Brandt, B.A.; Mines Administration Limited, Brisbane, Australia. **Computer-based geolog/assaylog system for coal exploration and evaluation,** (at: Symposium on Coal Borehole Evaluation) (Australian Institute of Mining and Mettallurgy) 1977 pp.48-62.

Abstract: Describes the MINAD system of computer storage and retrieval of geological and analytical data, which is particularly suited to the description of cores and cuttings from exploration drill-holes. The acquired data is quantitative, uniform and relatively complete and can be selectively retrieved for processing by a wide range of specialized computer programmes developed for the coal mining industry.

77.111

Gray, June K.; Wellar, Barry S., ed.; City of Toronto Planning Board Research, Toronto, ONT.. Canada. Ministry of State for Urban Affairs. **Information system inputs to programmes - The City of Toronto Development Monitoring System,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 1 Plenary papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Assocation) 1977 pp.118-132.

Abstract: Compares different methods of monitoring land use changes over time and presents the major features of software development in the city of Toronto Development Monitoring System. There are problems with incompatibility and with unreliability of data which result from decentralization of information and from existing methods of data collection and measurement. Recommendations are made to upgrade the jobs of the skilled people who are doing this work.

Location: 18.

77.112

Grayman, Walter M.; W.E. Gates and Associates Inc.. **Geographic information system for hydrologic simulation and analysis,** (in: Transactions of the American Geophysical Union, Vol.58, no.6) 1977 pp.383.

77.113

Greulich, Gunther H.; Boston Survey Consultants Inc., MA.. **Cadastre - U.S.A.,** (in: Surveying and mapping, Vol.37, no.3) 1977, Sept. pp.221-232.

Abstract: Existing methods of land-plan development in America and elsewhere are examined. The possibility of inclusion of existing data in a new land record system is considered. Accuracy requirements are reviewed and realistic standards of tolerance suggested. A step-by-step procedure of creating a cadastre follows. Old plans, new surveys, parcel identifiers, monumentation, filing of field notes, survey plan, and the cadastral map are described and supported by illustrations.

Location: 05,20,28,36.

77.114

Gruza, G.V.; Reitenbach, R.H.; Tomlinson, Roger F., ed.; World Data Center, Oblast, U.S.S.R.. **Computerized processing of large amounts of meteorological data,** (at: Proceedings of the Commission on Geographical Data Sensing and Processing) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1977 pp.63-65.

Abstract: Discusses software problems in processing large amounts of digital meteorological data and describes specific features of the system and programme packages used for processing the data.

Location: 01.

77.115

Halford, Joseph D.; Berkeley-Charleston-Dorchester Counc. of Gov., Charleston, SC.. **Automated urban mapping in South Carolina,** (at: Proceedings of the 43rd Annual Meeting of the American Society of Photogrammetry, held in conjunction with 37th American Congress on Surveying and Mapping meeting) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1977.

Abstract: Describes the Berkeley-Charleston-Dorchester mapping project, an attempt at providing low cost, efficient map production and updating system with no compromises in accuracy. The mapping system is linked to various management information sources so that it can be used for land use inventories, tax base evaluations, traffic planning, water quality studies, etc. The computational and data handling methods are quite eclectic and unconventional in the interest of maintaining quality and efficiency without high cost.

77.116

Hallen, Sten-Ake; Sweden. National Central Bureau of Statistics, Stockholm. **Regional Statistical Data Base,** (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.10-18.

Abstract: Discusses RSDB, an interactive system for storage, processing, retrieval and display of regional data.

Location: 15.

77.117

Handler, William E.; Lundy Electronics and Systems Incorporated. Glen Head, N.Y.. **Digital data editing system. Final report - 26 Feb., 1976 - 25 Feb., 1977,** Ad-A062 551/7ST,.

Abstract: A requirement within a computerized map and chart production process is editing of the digitized data prior to the final copy. This paper describes an off-time editing subsystem of the semi-automated cartography system developed by the U.S. Army Engineer Topographic Laboratory (USAETL) at Fort Belvoir and the Defense Mapping Agency (DMA) production centers.

77.118

Harper, R.H.; Murch, R.A.; Anochie, Ononeze M., ed.; City of Calgary. Management Systems Development Department. International City Management Association. **City of Calgary city-owned land inventory system,** 0-91648-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.400-418.

Abstract: In 1974, the City of Calgary began the design and development of a computer supported system to assist the Land Department in managing the property and buildings owned by the City. This paper discusses the development approach used, the conceptual architecture adopted, and some of the problems and benefits encountered. Samples of the data items maintained and the reports produced are also provided.

Location: 07.

77.119

Hertling, Hans; University of Stockholm, Sweden. **ERU mapping system,** (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.59-67.

Abstract: Concerns the ERU mapping programme for the mapping of regional data and provides examples of the data display.

Location: 15.

77.120

Hicks, Jimmy E.; Hauger, Tom; National Science Foundation. **Managing natural resource data: Minnesota Land Management Information System**, PB-284-935, NSF/RA-770596, (Council of State Governments) 1977, May.

Abstract: The MLMIS is a computerized data bank of land resource information that has been collected by various state and federal agencies. Discusses data collection, encoding, storage, manipulation, analysis, land use, zoning, ownership, geology, soils, forest cover, water orientation and highway orientation. Considers requirements for a land information system.

Location: 20,17.

77.121

Hilliard, James A.; University of Wisconsin. Cartographic Laboratory. **Application of computer assisted cartographic methods to road mapping**, (at: Proceedings of the American Congress on Surveying and Mapping, Fall Technical Meeting) (American Congress on Surveying and Mapping) 1977 pp.271-281.

Abstract: Outlines an approach developed for the possible creation of a system for the handling of road mapping tasks through the use of computer-assisted technology. Includes discussions of (1) the American automobile road map, (2) major road map user needs and the specific map information portrayal requirements necessary in meetings these needs, and (3) possible methods for handling minimum road map information portrayal requirements with computer-assisted technology including various possibilities for the treatment of point, line and area type data.

Location: 05.

77.122

Hopkins, Lewis D.; **Methods for generating land suitability maps: A comparative evaluation**, (in: Journal of the American Institute of Planners, Vol.40, no.6) 1977 pp.394-413.

Abstract: ?

Location: 07,10,14,28,36.

77.123

Horwood, Rosemary; Anochie, Ononeze M., ed.; City of Seattle. Dept. of Community Development. International City Management Association. **Correlation of view and housing values using geocoded building permit data**, 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.527-537.

Abstract: Describes a study designed to measure the significance of view in housing decisions.

Location: 07.

77.124

Hsu, Shin-yi; State University of New York at Binghamton. Department of Geography. **Automation of thematic maps with electro-optical coloration methods**, (at: Proceedings of the 43rd Annual Meeting of the American Society on Photogrammetry, held in conjunction with the 37th American Congress on Surveying and Mapping Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.339-347.

Abstract: Introduces a method which can convert digital thematic map data into colour images. Describes the colormation system used at Rome Air Development Center to produce thematic maps.

Location: 05.

77.125

Hutchison, W.W.; Picklyk, D.D.; **Example of the application of the principles of file management to geological data-CANMINDEX,** (in: COGEODATA newsletter, Vol.3,) 1977 pp.6-12.

77.126

Huxhold, WIlliam E.; Wellar, Barry S., ed.; City of Milwaukee. Central Electronic Data Services Department. Canada. Ministry of State for Urban Affairs. **Milwaukee computer graphics system pre-implementation phase,** (at: Information system inputs to policies, plans and programs/ URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.289-297.

Abstract: The City of Milwaukee installed an interactive computer graphics system used in a range of applications from drafting to graphical analysis of local data files. Traces the development of the project up to implementation, describing how the project was organized and what decisions, analyses, and activities took place in order to obtain support and funding.

Location: 18.

77.127

Hydrologic Engineering Center. **Proceedings of a seminar on variable grid resolution- Issues and requirements, held on 18-19 Aug., 1977 at the Hydrologic Engineering Center, Davis, CA.,** AD-A055 542/5ST,.

Abstract: Creating a geographic information system (GIS) involves the problem of needing more detail in certain parts of the study area and less detail in other parts. This problem may be handled in the classification, encoding or data structure stages of creating a GIS. The seminar participants worked on this problem primarily in terms of data structure such as triangles, polygon overlay to a variable grid and variable grid by a packed run-length data storage scheme.

77.128

Irish, Sumner B.; Clarkson College of Technology. Department of Civil and Environmental Engineering. **Land data systems - Another look,** (at: Proceedings of the 43rd Annual Meeting of the American Society on Photogrammetry, held in conjuction with the 37th American Congress on Surveying and Mapping Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.392-407.

Abstract: Defines land data systems, discusses factors involved in establishing such systems and outlines a procedure for system implementation.

Location: 05.

77.129

Irish, Sumner B.; Wellar, Barry S., ed.; Clarkson College of Technology. Department of Civil and Environmental Engineering. Canada. Ministry of State for Urban Affairs. **Technical geographic requirements of the cadastre,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3. Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.149-161.

Abstract: Land related information is often called a cadastre which this paper defines. From this, the geographic data requirements can be spelled out. The resources to satisfy this need will next be examined. The merging of data resources and data requirements will produce the cadastre. However, geographic data maintenance is a key element of consideration. Finally, a brief note on the operational organization is regarded as essential.

Location: 01.

77.130

Jagoe, Ellis H.M.; Wellar, Barry S., ed.; Council of Maritime Premiers. Land Registration and Information Service. Canada. Ministry of State for Urban Affairs. **Introduction and economic review of Maritime Land Registration and Information Service of the Council of Maritime Premiers,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 2 Invited papers. Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.110-125.

Abstract: Describes the LRIS, a cadastral system being developed in the Maritimes, which includes a co-ordinate survey control network, resource and urban base maps with property boundary overlays, an improved land tenure system, and a land data bank. Details the economics of the system.

Location: 01,18.

77.131

Jalbert, J.S.; Shepherd, A.D.; **System for regional analysis of water availability,** ORNL/NUREG/TM-82, (Oak Ridge National Laboratory) 1977, June.

77.132

Jameson, Donald A.; Gross, Betty L.; Colorado State University. Department of Range Science, Fort Collins. **Feedback, an approach to natural resource management,** PB-287 638/1ST, 27, (series: Range science series), 1977, June.

Abstract: This report concludes a project effort on 'Regional Analysis and Management of Environmental Systems'. It centers on a study of the production of meat by the Crow Valley Livestock Association on the grazing lands of the Pawnee National Grasslands in northeastern Colorado as a microcosmic model representing a potential 'national problem'. A major product of the study is a series of five computer programmes which, within a given number of constraints, provide the most appropriate analysis. Each of these programmes is presented in a separate chapter. The first, 'Public', consists of a series of routines for multivariate statistics, the second, 'Goal', is a multiple objective optimization package containing the many desired objectives within which selections and alternatives must be found, the third, 'Reflow', is an economic and demographic simulator for economic input-output analysis and demographic projections the fourth, 'Ranges', is an ecological simulation model for grasslands that is designed to operate for a variety of grassland situations but uses only readily available local data, and the fifth, 'E-Zmap', contains a mapping procedure that incorporates information from map overlays into a single combined map that can identify resource response units and which would be usable on small computers.

77.133

Jaramillo, Placido E.; Orange County Environmental Management Agency, Santa Ana, CA.. **EPAMS: Environmental Planning and Management System - Basic elements,** (at: Proceedings of the 43rd Annual Meeting of the American Society on Photogrammetry, held in conjunction with the 37th American Congress on Surveying and Mapping Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.573-757-769.

Abstract: Describes the basic elements of environmental information systems: data collection and data base development, data analysis capabilities, and data needs.

Location: 05.

77.134

Johnson, Mark R.; Dueker, Kenneth J.; **LANDSAT: Derived land use data as an input to geographic information systems,** 90, (series: Technical report series), (University of Iowa. Institute of Urban and Regional Research) 1977, Apr..

77.135

Jurkat, Mayme; Legensky, Steven; Stevens Institute of Technology. Center for Municipal Stuies and Services, Hoboken, N.J.. **Hoboken site status inventory. Status report (final),** PB-278 760/4ST, UO-LCCM-HOB-77-006, SIT-CMSS-78-1010,.

Abstract: The purpose of this program was to design the computer framework for collecting, aggregating and analyzing all geographically based data available about the city of Hoboken. The initial design and implementation of a physical structures survey was started and the first priority area of the city, according to the Hoboken Community Development Agency, was completed. Technical problems encountered and resolved are described in the report and recommendations are made for continuing to build and use the system.

77.136

Kelsey, D.; Kelsey, C.T.; Oak Ridge National Laboratory, TN.. **Storage and retrieval of county-level tree species joint occurrence matrices from continuous forest inventory data,** EDFB/IBP-75/13,.

Abstract: Three computer programs, to be run in sequence, have been developed to summarize forest tree species occurrence and joint occurrence information by county from Forest Service inventory data. The joint occurrence data resulting from these programmes is in a form suitable for calculation of species indexes of association. By summarizing joint occurrence data on a county-by-county basis, patterns of species association can be examined over various combinations of counties. Flow diagrams, programme listings, and formats are included. This report is essentially a user's guide for the programmes. The first programme in the sequence, ZYG03, is a FORTRAN programme to summarize species occurrence data by county from the inventory data. Secondly, CONDNS is a SAS program to extract the species occurrence data for any designated subset of counties. Finally, MUCJOM is a FORTRAN programme to tabulate the species occurrence data from ZYG03 or CONDNS into a species joint occurrence matrix. The resulting species joint occurrence matrix contains the data necessary for interspecies association analysis with any one of the several presence/absence species association indexed (Cole 1949, Goodall 1979).

77.137

Kennedy, Michael; Meyers, Charles R., Jr.; **Spatial information systems: An introduction,** (Urban Studies Center) 1977.

77.138

Kentucky. Department of Revenue, Frankfort. **CREAL, a system for computerizing real estage and land records system. Phase 1 extension. Part 1 Project management report. Volume 1 Part 2 Appendices. Volume 2,** PB-289 337/8ST, 338/6ST,.

Abstract: A study was made of CREAL systems. Existing computerized systems were evaluated and alternative approaches and techniques were explored. Volume I of the final report for the Phase I extension period contains a narrative discussion of the scope, completion status, and results attained for each research activity included in the grant award. It also highlights several technical considerations identified during the extension period which impact future development plans. Volume 2 of the final report for the Phase I extension period contains the Appendices which include the following materials developed during the extension period: (1) a booklet for policymakers and tax administrators containing non-technical information dissemination program materials and (2) internal working documents for project staff use only on special studies and miscellaneous activities which were conducted to more clearly define Phase II development requirements and to provide for a more orderly transition between the major project phases.

77.139
Kevany, Michael J.; Wellar, Barry S., ed.; System Development Corporation, Gaithersburg, MD.. Canada. Ministry of State for Urban Affairs. **Review: 15 Years of URISA geoprocessing,** (at: Information system inputs to policies, plans and programs. URISA 1977. Volume 2 Invited papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.126-134.

Abstract: Reviews the evolution of geoprocessing as it has been reported in URISA proceedings over the past 15 years. It defines geoprocessing as it is applied to the activities of URISA members. An analysis of the primary geoprocessing issues discussed over the years is presented along with a description of the application areas which have been addressed. The importance of the U.S. Census Bureau's GBF/DIME development and support is highlighted. Finally, the signficance of these past 15 years of experience to the present and future of the field is evaluated.

Location: 18.

77.140
Khakhar, Dipak; Nordbeck, Stig; Lund University, Lund, Sweden. **Chorological information processing system, NORMAP,** (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.49-58.

Abstract: Describes a mapping software package, NORMAP for data analysis and automated mapping of choropleth maps. Provides data display examples.

Location: 15.

77.141
Khakhar, Dipak; Lund University, Lund, Sweden. **Swedish road data bank and a distance table project,** (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.85-93.

Abstract: Concerns a project to calculate shortest distances between places in Sweden. Discusses data retrieval from multi-purpose data bases.

Location: 15.

77.142
Kinzy, Stephen W.; University of Iowa. Institute of Urban and Regional Research. **Geoprocessing in local governments: A feasibility study for the City of Omaha,** (City of Omaha. Planning Department) 1977.

Abstract: Gives a critique of DIME and its anxillary programs. Emphasizes the importance of geographic data base maintenance. Includes a section on administrative problems encountered in establishing and operating a land data system. Discusses the range of applications for geographic information systems in urban and regional affairs.

77.143
Kinzy, Stephen W.; Anochie, Ononeze M., ed.; Omaha City Planning Department. Municipal Information Division. International City Management Association. **ODIS: An On-line DIME Implementation System,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.504-521.

Abstract: Describes ODIS, a system union integrates the three DIME implementation procedures of correction, update and extension into a unified program. Also discusses a transfer program that has resulted in the transfer of ODIS to various SMSA's in the United States.

Location: 07.

77.144

Kloosterman, Bruce; Faulkner, S. Michael; Wellar, Barry S., ed.; Canada. Department of Agriculture. Central Experimental Farm. Canada. Ministry of State for Urban Affairs. **Cartographic data structure for efficient computer processing,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.269-278.

Abstract: Describes the data structures that have evolved for the Soil Cartography and Map Processing System (SCAMP) of the Canada Soil Information System (CanSIS), a soil site data and a map processing system.

Location: 18.

77.145

Kloosterman, Bruce; Douglas, David H.; Canada. Department of Agriculture. Soil Resource Inventory. University of Ottawa. Department of Geography and Regional Planning. **Role of computer information systems in soil science,** (at: Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Capital Geographic Information Processing Group) (University of Ottawa. Department of Geography and Regional Planning) 1977 pp.19-23.

Abstract: Discusses the development, components and role of soil information systems, and uses the Canadian Soil Information System (Can SIS) as an example.

Location: 01.

77.146

Lay, John C.; **Preparing property identification maps for land use data systems,** (at: Proceedings of the 43rd Annual Meeting of the American Society on Photogrammetry, held in conjunction with the 37th American Congress on Surveying and Mapping Meeting) (American Congress on Surveying and Mapping) 1977.

77.147

Lehman, D.H.; Mitre Corporation, Bedford, MA.. **Geographic data display implementation,** AD-A044 621/1ST, MTR-3349,.

Abstract: To support automated display of positional intelligence data, detailed geographic background displays are needed over a wide range of scales. The Geographic Data Display System (GDDS) displays geographic data on a raster scan display and allows the user to zoom and translate around a map of Central Europe. As the user zooms in on an area, the area is displayed in greater detail, and geographic features such as rivers, roads, etc., are added to the display. This report outlines the capabilities and design of the GDDS, describes the implementation, and documents the programmes.

77.148

Lloyd, P.E.; Mason, C.M.; **Establishment - based data for the study of intra-urban and sub-regional change. The Manchester Data Bank,** 22, (series: Urban and regional discussion papers), (University of Glasgow) 1977.

77.149

Longy, M.A.P.; **Restructuring digital map data for use in databases with spatial characteristics,** (at: Convention informatique 1977/Information Convention 1977) (Convention Informatique) 1977 pp.167-171.

Abstract: The ordinance survey is the national topographic survey and mapping agency of Great Britain and its main task is surveying, revising, drawing, printing and publishing large scale topographic maps. The emergence of a demand for computer based information systems has led to a requirement for topographic information in digital form which can be used in its own right without necessarily producing a graphical output at all. Many local government authorities and public utilities have an interest in developing their information systems so that they can be handled by computer.

77.150

Lynch, L.G.; Moore, Alan W., ed.; Bie, Stein W., ed.; Soil Conservation Service of New South Wales, Sydney, Australia. **Input methods and facilities available for land survey data,** 90-220-0638-7, (at: Uses of soil information systems. Proceedings of the Australian Meeting of the ISSS Working Group on Soil Information Systems) (Centre for Agricultural Publishing and Documentation) 1977 pp.11-18.

Abstract: A survey has been carried out by the Soil Conservation Service of N.S.W. on the methods and facilities available for the input of land information data to a computer system. The sources and methods available for input are described, with their advantages and limitations discussed. An outline of the types of input facilities available, particularly digitizers, is given. Features which should be considered in the selection of a suitable configuration are discussed.

Location: 20.

77.151

Lynch, L.G.; Emery, K.A.; **Regional information system for the Bathurst-Orange Growth Area,** (in: Journal of the Soil Conservation Service of N.S.W., Vol.33, no.1) 1977, Jan. pp.43-46.

Abstract: Discusses a regional inventory and evaluation system of land resources in the Bathurst - Orange Growth Area. The system involves geocoding using aerial photographs and has the capability of producing cartographic maps.

Location: 17.

77.152

Mackenzie, H.G.; Smith, J.L.; Moore, Alan W., ed.; Bie, Stein W., ed.; CSIRO. Division of Land Use Research, Canberra, Australia. **Data storage and retrieval,** 90-22-0638-7, (at: Uses of soil information systems. Proceedings of the Australia Meeting of the ISSS Working Group on Soil Information Systems) (Centre for Agricultural Publishing and Documentation) 1977 pp.19-36.

Abstract: Concerns soil information systems and the need for data base management systems. Discusses user needs, user languages, file structures, and data base maintenance.

Location: 20.

77.153

Madill, R.J.; Douglas, David H.; Canada. Department of Fisheries and Environment. Forest Management Institute. University of Ottawa. Department of Geography and Regional Planning. **So you need a geographic information system?,** (at: Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Capital Geographic Information Processing Group) (University of Ottawa. Department of Geography and Regional Planning) 1977 pp.5-12.

Abstract: Describes Forest Management Institute experiences with the process of understanding the data-handling problem, determining information system requirements, evaluating alternative systems and system implementation. In addition to a technical discussion of the application of geographic information systems, aspects of the above problem solving process of concern to management of an organization are also examined. The subject is introduced by a brief overview of geographic information systems.

Location: 01.

77.154

Males, Richard M.; **ADAPT - A spatial data structure for use with planning and design models,** (at: Working Papers from the Advanced Study Symposium on Topological Data Structures for Geographic Information Systems2) 1977, Oct. pp.1-35.

77.155

Manitoba. Resources Data Task Force. **Manitoba land-related data information systems: Study reports,** (Manitoba Interdepartmental Planning Board) 1977, Nov..

Abstract: A series of reports which summarizes the findings and recommendations of the Resources Data Task Force. This task force was formed to examine the present situation in the various departments and agencies of the government of Manitoba concerning the gathering, analysis, storage, retrieval and dissimination of land related data and information. An examination of current land related information systems in the U.S. and Canada and the province of Manitoba is provided. Some other subjects covered are terms of reference, map requirements, access and production and establishment of a geo-referencing base.

Location: 01.

77.156

Marble, Duane F.; Peuquet, Donna J.; Tomlinson, Roger F., ed.; State University of New York at Buffalo. Geographic Information Systems Laboratory. **Computer software for spatial data handling: Current status and future developmental needs,** (at: Proceedings of the Commission on Geographical Data Sensing and Processing) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1977 pp.83-91.

Abstract: Concerns an inventory, begun in 1974, of the available software in spatial data handling, and the subsequent classification of the different software types and then considers future software needs revealed by the inventory with respect to spatial data handling algorithms, data structures, and data base management systems.

Location: 01.

77.157

Margerison, T.A.; **Computer-aided map-making,** (in: Endeavour, New Series, Vol.1, no.3-4) 1977 pp.139-142.

Abstract: Discusses the impact of automation on cartography in terms of economics, production speed, and quality

Location: 09,20,21,23,28,33,35.

77.158

Marley, Michael; Wellar, Barry S., ed.; City of Milwaukee. Central Electronic Data Services Department. Canada. Ministry of State for Urban Affairs. **Structured development of a parcel based on master property file for planning and policy analysis,** (at: Information system inputs to policies, plans and programs/ UEISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.134-138.

Abstract: Considers a geocoding system with standardized parcel addresses used to build a data base property file, and the application of this data base for urban planning and management.

Location: 18.

77.159

Matthews, Michael J.; Miller, Robert L.; Fried, Eric; Wellar, Barry S., ed.; New York State. Department of Environmental Conservation. Wildlife Resources Center. Canada. Ministry of State for Urban Affairs. **Plan for the development of an urban wildlife habitat inventory,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Associations) (Urban and Regional Information Systems Association) 1977 pp.38-45.

Abstract: Describes a pilot inventory, undertaken to identify, define, categorize and quantify wildlife habitat within urban and suburban areas. Procedures to evaluate wildlife habitat will include the use of aerial photo interpretation, census tract data, wildlife nuisance complaints, and land use and resources information. Maps and overlays of urbanized areas to designate urban land use and wildlife habitat are planned.

Location: 18.

77.160

Mauchly - Wood Systems Corporation. **Geographic indexing support system geographic data base description,** (Mauchly - Wood Systems Corporation) 1977, Mar..

77.161

Maxson, Gaybrielle E.; Anochie, Ononeze M., ed.; Ohio. Department of Natural Resources. International City Management Association. **Ohio Capability Analysis Program and its application in Stark County, Ohio,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.419-426.

Abstract: Describes OCAP, a computer programme for mapping, analysing, overlaying, scaling and retrieving data for land capability studies. Provides an example of an OCAP application to Stark Country.

Location: 07.

77.162

McCown, Brent H.; Butler, Kent S.; Gates, William A.; University of Wisconsin. Institute for Environmental Studies. **Resource data management system, GRASP: (Geographical Resource Analysis Software Package) Application to the Lake Superior shorelands,** PB-291 814/2ST, IES-87, RF/MONO-76/10,.

Abstract: GRASP is an interactive computer-based resource and land use information system that can be used by persons with little or no previous computer experience. GRASP offers immediate and low-cost access to geographic data base and is operated by simple commands through a portable teletypewriter or graphics terminal connected by telephone to a computer. GRASP is self-contained, providing facilities for interactive data entry and updating, data manipulation, and data display. GRASP stores data in bitplanes, cellular grids, and hashed files so that complex data aggregations can be efficiently manipulated and displayed in a variety of map or tabular formats. The need for a capability for interrelating and modeling various resource data in interdisciplinary research served as the impetus for GRASP'S development. GRASP was tested on a 126-variable data base that describes the physiography, soils and geology, hydrology, vegetation, coastal features, and land use/ownership of a 51-square-kilometer section of the Wisconsin Lake Superior shoreline. Specifically, GRASP has been used to analyze the additional lands that may be impacted by new technologies for on-site waste disposal systems for residential and recreational land use. GRASP is now being integrated into a hybrid resource data system.

Location: 17.

77.163

Masry, Salem E.; McLaren, R.A.; **Digital techniques for map revision and checking digitized data. Technical report,** 40, (University of New Brunswick. Department of Surveying and Engineering) 1977, Jan..

77.164

Meder, H.G.; Palermo, F.P.; IBM Sci. Cent., Heidelberg, Germany. **Data base support and interactive graphics,** (at: Proceedings of the 3rd International Conference on Very Large Data Bases) (IEE) 1977 pp.396-402.

Abstract: A graphical editor is used to expand the data manipulation language of a data base by a graphical component. The resulting system is especially useful for the treatment of data of geographical origin and for solving problems interactively.

77.165

Menely, G. Joseph; Rushton, Gerard; Kohler, James; Wellar, Barry S., ed.; University of Iowa. Health Services Research Center. Canada. Ministry of State for Urban Affairs. **Geocoded statewide information system for locational analysis,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.306-315.

Abstract: A geocoded data system based on enumeration district data and oriented to the needs of statewide regional planning activities as described. A dictionary of alternative place identifiers enables use of the system for particular service planning activities with a small number of special purpose data input steps. Key features of the system and illustrations of its analytical capability are described.

Location: 18.

77.166

Meyer, R.F.; **Petroleum resource data systems,** (in: Journal of the International Association for Mathematical Geology, Vol.9, no.3) 1977 pp.281-299.

Location: 02.

77.167

Mickle, M.H.; Vogt, W.G.; Trygar, T.A.; Wright, G.L.; University of Pittsburgh, PA.. **Use of a computer file to construct a model of city street,** (in: Applied mathematical modelling, Vol.1, no.6) 1977, Sept. pp.344-350.

Abstract: Explores a procedure to identify and calibrate a model for large-scale networks, specifically, large-scale street networks. The original data base for the identification process was the Geographic Base File (GBF) system of the US Bureau of the Census. To illustrate the identification process clearly, a particular street network, Haddonfield, New Jersey, is identified.

Location: 20.

77.168

Mitchell, G.J.; National Geodetic Survey, Rockville, MD.. **National Geodetic Survey contribution to modern land data systems,** (in: Photogrammetric engineering and remote sensing, Vol.43, no.6) 1977 pp.755.

77.169

Mitchell, William B.; Guptill, Stephen C.; Anderson, K. Eric; Fegeas, Robin G.; Hallam, Cheryl A.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **GIRAS: A Geographical Information Retrieval and Analysis System for handling land use and land cover data.,** (series: United States Geological Survey professional papers), (United States Government Printing Office) 1977.

Abstract: Describes GIRAS, designed to accept digitizer input, provide comprehensive editing facilities, produce cartographic and statistical output, permit retrieval and analysis of data, and exercise data base management tasks. The editing and output procedures are currently operational and utilize an arc segment, polygon approach in a production mode. The system incorporates facilities for gridding the polygon data to make it compatible with grid-based data sources. Current system development is focused upon an interactive data base to enable immediate retrieval and display of map information. Users will

be able to search for either locations or attributes and display results in a graphic or tabular form.
Location: 01,17.

77.170
Mitchell, William B.; Fegeas, Robin G.; Fitzpatrick, Katherine A.; Hallam, Cheryl A.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Geographic information system development in the CARETS Project (Central Atlantic Regional Ecological Test Site) Volume 4. Final report,** E78-10128, N78-24592,.
Location: 17.

77.171
Moellering, Harold; Ohio State University, Columbus. **Interactive cartographic design. Paper 77-259,** (at: 43rd Annual Meeting and Proceedings of the American Society of Photogrammetry held in conjunction with 37th American Congress on Surveying and Mapping) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1977 .
Abstract: Considers the use of virtual maps and interactive data display techniques in map design with examples provided.
Location: 05.

77.172
Molloy, A.M.; **Geographic data base development,** AD-A037-116, (Mitre Corporation) 1977.
Location: 17.

77.173
Monmonier, Mark S.; Kirchoff, D. Michael; Syracuse University. Department of Geography. **Choroplethic plotter mapping for a small minicomputer,** (at: Proceedings of the 43rd Annual Meeting of the American Society on Photogrammetry, held in conjunction with the 37th American Congress on Surveying and Mapping Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.318-338.
Abstract: Describes a system for the production of choropleth maps. Discusses system hardware, file structures and data display.
Location: 05.

77.174
Morin, E.J.; Ethier, J.M.; Energy Resources Data System. **Energy Resources Data System: Identification of deficiencies and requirements,** (Energy Resources Data System) 1977, Nov..
Abstract: The Energy Resources Data System (ERDS) was initiated following a number of requests to the Department of Energy and Natural Resources for the development of basic data files. The first stage, reported here, identifiers the deficiencies of existing data systems, the requirements of a replacement system, and an approach to establishing this stystem. Contains detailed recommendations, together with a review of all activities and studies to date. Included is a specific request to proceed with Stage II - Basic Design. The recommendations also reflect concern about possible conflict between the proposed ERDS system and existing commercial suppliers of data.
Location: 01.

77.175
Mowill, Ragnild S.; **Residential energy use: Combining disaggregated data sources for policy analysis,** P-5754, (series: Rand reports), 1977, Jan..
Abstract: Problems involved in combining data bases at various geographical levels are described in the context of estimating household demand for alternative energy types. Though a high degree of accuracy was attained, it was balanced by incomplete and nonstandard computerized coding of data, insufficiently marked maps of varying scale, and missing or suppressed values of census data. The overall goal of the research was to assist policy-makers in providing better information about the economic efficiency of different energy types and the distributional implications of alternative policies for these types.

77.176

Moyer, D. David, ed.; Wellar, Barry S., ed.; United States. Department of Agriculture.. Canada. Ministry of State for Urban Affairs. **Land parcel systems: An information tool for policy planning and implementation,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.162-175.

Abstract: Discusses data needs in the areas of title recording, conveyancing, assessment, and land policy. Suggests that an improved data base is needed in order to address several land policy issues of current concern, including land use planning, corporate control of agricultural production, and alien investment in U.S. real estate. Suggests electronic county cadastre (ECC) modeled on the CULDATA system as a way to meet these data needs. Specific recommendations on implementing an ECC are made, focusing on a uniform parcel identification system.

Location: 01.

77.177

Nakamura, C.; Piepgrass, E.B.; City of Calgary. Management Systems Development Department. **Computer assisted mapping. Preliminary report. Project 201,** (City of Calgary) 1977, June.

Abstract: Summarizes and examines the relationships between computer assisted mapping in Calgary, and the Cadastral Mapping Project, and recommends a continuation of the project to Systems Proposal stage.

Location: 01.

77.178

Ogilvie, Mary; Council of Maritime Premiers. Land Registration and Information Service. **Experience in building the cadastre in the Maritime provinces,** (at: Proceedings of the 43rd Annual Meeting of the American Congress on Surveying and Mapping Meeting. (Technical papers)) (American Congress on Surveying and Mapping) 1977 pp.771-777.

Abstract: Describes the LRIS of the Maritimes and outlines three facets of the system: Guarantee of title, guarantee of boundary and the computer system.

Location: 05.

77.179

Olson, A.C.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Graphic Analysis of Resources by Numerical Evaluation Techniques (GARNET),** (in: Computers and geosciences, Vol.3, no.3) (at: Proceedings of the Fifth Geochautauqua) 1977 pp.539-545.

Abstract: An interactive computerprogram for graphical analysis has been developed by the US geological survey. The programme embodies five goals, (1) economical use of computer resources, (2) simplicity for user applications, (3) interactive on-line use, (4) minimal core requirements, and (5) portability. It is designed to aid (1) the rapid analysis of point-located data, (2) structural mapping, and (3) estimation of area resources.

Location: 20.

77.180

Ondrejas, Stephen J.; Morath, Stephen R.; Anochie, Ononeze M., ed.; City of Witchita Falls. Planning Department. International City Management Association. **Urban planning in Wichita Falls, TX.: One year after USAC,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.292-299.

Abstract: Reports on the effect and utilization of the implemented applications on the urban planning activities of Witchita Falls. Discusses the anticipated future effect and utilization of the implemented applications. Concludes that it was possible to implement urban planning applications as part of a totally

integrated municipal information system and that the implemented applications offer a great potential for transfer to other municipalities.
Location: 07.

77.181

Ontario. Ministry of Natural Resources. Task Force on Geographical Referencing. **Computer-assisted cartographic systems as further aids to geographical referencing: A review of several advanced automated cartography systems, their purpose, operational techniques, equipment, data base facilities and current and imminent capabilities,** 8, (series: Geographical referencing), (Ontario. Ministry of Natural Resources) 1977, ca.
Abstract: Examines six automated mapping systems in terms of data encoding, processing and data display techniques.
Location: 10.

77.182

Ontario. Ministry of Natural Resources. **Computerization of land indexes and use of geocodes. Internal report,** (Ontario. Ministry of Natural Resources) 1977.

77.183

Osleeb, Jeffrey P.; Moellering, Harold; Anochie, Ononeze M., ed.; Ohio State University. Department of Geography. International City Management Association. **TRANPLAN: An interactive geographic information system for the design and analysis of urban transit systems,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.212-225.
Abstract: Describes an interactive computer graphic system, TRANPLAN, that has been developed to enable the transit planner to easily and cheaply simulate transit problems in order to effectively evaluate changes to an existing transit system or the design of a totally new one.
Location: 07.

77.184

Ottoson, Lars; National Land Survey of Sweden, Gaule. **Information systems at the National Land Survey of Sweden,** (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.104-114.
Abstract: Gives some examples of the use of GIS in data acquisition, storage and display of landscape data in the National Land Survey of Sweden.
Location: 15.

77.185

Payne, Walter C.; Smith, Roger; Byler, Richard P.; Hunley, Walter E.; **RMLR - A system for the Delaware Valley,** (at: Proceedings of the 43rd Annual Meeting of the American Society on Photogrammetry, held in conjunction with the 37th American Congress on Surveying and Mapping Meeting. (Technical papers)) (American Congress on Surveying and Mapping) pp.660-665.
Abstract: Describes a project to demonstrate the usefulness of cadastral systems developed from mapping data bases.
Location: 05.

77.186

Peuquet, Donna J.; **Raster data handling in geographic information systems,** (at: Proceedings of Advanced Study Symposium on Topological Data Structures for Geographic Information Systems) 1977.

77.187

Picklyk, D.D.; **Requirements of the data to be used for resource analysis,** (in: Journal of the International Association for Mathematical Geology, Vol.9, no.3) 1977 pp.301-308.
Location: 02.

77.188

Porter, Allen, et al.; Douglas, David H.; Canada. Department of Statistics. Integration and Systems Coordination Group. University of Ottawa. Department of Geography and Regional Planning. **Panel on human problems of conversion from manual to automated methodologies: In the shop and in the marketplace,** (at: Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Capital Geographic Information Processing Group) (University of Ottawa. Department of Geography and Regional Planning) 1977 pp.61-65.

Abstract: A panel discussion which addresses some of the human engineering problems connected with the introduction of automated methodologies.

Location: 01.

77.189

P.S. Ross and Partners. Management Consultants, Halifax, N.S.. Canplan Management Services Limited. Maritime Computers Limited. Servant, Dunbrack, McKenzie and MacDonald Limited. Stewart, MacKeen and Covert. Council of Maritime Premiers. **Benefit-cost study of the Land Registration and Information Service (LRIS) programme,** (P.S. Ross and Partners) 1977, Mar..

Abstract: Details a cost benefit study of the four phases of the LRIS programme of the Maritimes. Discusses economics benefits, cost-benefit results, and user needs for each phase.

Location: 01.

77.190

P.S. Ross and Partners. Management Consultants, Halifax, N.S.. Canplan Management Services Limited. Servant, Dunbrack, McKenzie and MacDonald Limited. Maritime Computers Limited. Stewart, MacKeen and Covert. Council of Maritime Premiers. **Benefit-cost study of the Land Registration and Information Service (LRIS) programme. Executive summary,** (P.S. Ross and Partners) 1977, Apr..

Abstract: Summarizes the results of a cost-benefit study of the LRIS programme of the Maritimes. Describes both quantifiable and non-quantifiable benefits used for system evaluation and provides specific results for each phase of the programme.

Location: 01.

77.191

Rapport, David; Douglas, David H.; Canada. Department of Statistics. Office of the Senior Advisor on Integration. University of Ottawa. Department of Geography and Regional Planning. **Towards an ecological information system,** (at: Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Capital Geographic Information Processing Group) (University of Ottawa. Department of Geography and Regional Planning) pp.1977.

Abstract: Discusses the design of environmental information systems in terms of user needs, planning applications, and data needs.

Location: 01.

77.192

Reed, Carl; Wilcott, Curtis, et al.; Wellar, Barry S., ed.; Federation of Rocky Mountain States, INC. Fort Collins, Co.. Canada. Ministry of State for Urban Affairs. **Comparison of selected operational capabilities of fifty-four geographic information systems,** PB-286 977/4ST, (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977.

Abstract: Initial evaluation results are presented for off the shelf computer software that may possibly contribute to a system which processes and outputs

spatially related data for the U.S. Fish and Wildlife Service. Two sets of criteria were considered. Operational criteria referreing to the general hardware and software characteristies of a particular programme, and functional criteria referring to the actual logical function on tasks performed by specific software. Provides tables comparing the fifty-four systems.
Location: 01,17,18.

77.193

Rhind, David W.; **Computer-aided cartography,** (in: Transactions of the Institute of British Geographers, New series, Vol.2,) 1977 pp.71-97.
Location: 36.

77.194

Roffe, Karen A.; **Computerized mapping for assessment of environmental impacts: A case study,** (at: Annual Conference of the American Institute of Planners) 1977.

77.195

Rogers, Edward R.; Kentucky. Department of Revenue, Frankfort. **CREAL (Computerized Real Assessment and Land Records) system design manual. 7 Volumes,** PCE19, PB-289 340-SET,.

Abstract: The CREAL System is a computerized system available to state and local government officials for use in planning, implementing, and administering their own real estate assessment and land records systems. The manual contains an introductory section, task narratives, programme solutions, and a stored data abstract. Individual volumes cover concepts, scope and use of the system design, detailed descriptions of task narratives and programme solutions, potential data elements, and an overview of principal project participants and activities

77.196

Rogers, Robert H.; **Land use inventory through merging of LANDSAT (satellite), aerial photography, and map sources,** (American Congress on Surveying and Mapping A25-2=Fall Church, VA A30=Proceeding of the American Congress on Surveying and Mapping, Fall Technical Meeting) 1977 pp.116-130.

77.197

Rothnie, James B.; Goodman, Nathan; Computer Corporation of America. Cambridge, MA.. **Survey of research and development in distributed database management,** (at: Proceedings of the 3rd International Conference on Very Large Data Bases) (IEEE) 1977 pp.48-62.

Abstract: Presents several key technical problems that must be overcome in developing general purpose distributed database management systems, and surveys current R & D efforts aimed at overcoming these problems.

77.198

Rothwell, David C.; Douglas, David H.; Canada. Department of Regional Economic Expansion. University of Ottawa. Department of Geography and Regional Planning. **Canadian postal code system as a geographic identifier in socio-economic research,** (at: Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Geographic Information Processing Group) (University of Ottawa. Department of Geography and Regional Planning) 1977 pp.31-34.

Abstract: Discusses the use of the postal code as a geographic location identifier in current (1977) socio-economic research.
Location: 01.

77.199

Rothwell, David C.; Wellar, Barry S., ed.; Canada. Department of Regional Economic Expansion. Canada. Ministry of State for Urban Affairs. **Development and application of a community profile on a national scale,** (at: Information system inputs to policies, plans and programs/ URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.107-122.

Abstract: Describes a community data system, the most comprehensive and sophisticated in the Canadian government. The master geographic file constructed at DREE allows for the linkage of a wide variety of secondary data sources and administrative files to produce data for small geographic units.

Location: 18.

77.200

Rowe, Peter G.; Gevirtz, Joel L.; Weichert, Phil; Wellar, Barry S., ed.; Southwest Center for Urban Research, Houston, TX.. Canada. Ministry of State for Urban Affairs. **Environmental Management Decision Assistance System for local government,** (at: Information system inputs to policies, plans and programs/ URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.46-55.

Abstract: Presents brief descriptions of the data bases and software in the EDMAS, a system developed to demonstrate the integration of data from various government agencies for use in local planning and management activities.

Location: 18.

77.201

Rowe, Peter G.; Gevirtz, Joel L.; Anochie, Ononeze M., ed.; Southwest Center for Urban Research, Houston, TX.. International City Management Association. **National environmental information system for local decision makers,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.386-399.

Abstract: Describes aspects of a natural environmental information system developed to meet the operating conditions of decision makers at local governmental levels. Focuses on the assessment of the natural environmental impacts of land use activities. Two aspects of this system function are discussed: the approach taken to the theoretical problem of objectively representing the transactions between land uses and their natural settings, and some of the considerations involved in translating this representation into an automated user-oriented decision-assistance system compatible with local needs and resource constraints.

Location: 07.

77.202

Rystedt, Bengt; Central Board for Real Estate Data, Gavle, Sweden. **Swedish land data bank - A multipurpose information system,** (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.19-48.

Abstract: Describes the modernization of the Swedish land records system and the proposed land data bank capabilities in terms of information content, data retrieval and updating. Also considers planning applications of the data bank.

Location: 15.

77.203

Salmen, Larry; Nez, George; Reed, Carl; Hamill, John; Gropper, James; Federation of Rocky Mountain States, Inc. Denver, CO.. **General design scheme for an operational geographic information system: Region 6 U.S. Fish and Wildlife Service,** PB-269 275/4ST,.

Abstract: This report presents a general system design, and outlines a basic set of system capabilities for a proposed U.S. Fish and Wildlife Geographic Information System. The system is to operate at two levels. One is a manual system for cataloging maps, relevant articles, and other paper documents. The second level is the automated level. At the automated level, a computer based information system will allow for data input, data analysis, and information output based on user specified criteria.

Location: 17.

77.204

Salmen, Larry; Gropper, James; Hamill, John; Reed, Carl; Federation of Rocky Mountain States, Inc. Fort Collins, CO.. **Natural resource geographic data bases for Montana and Wyoming,** PB-286 871/9ST.,.

Abstract: The report documents the results of a survey of over 400 existing geographic data bases covering Montana and Wyoming. The data bases surveyed include automated and nonautomated data relating to 12 physical, biological and economic factors which are of potential value to the U.S. Fish & Wildlife Service (Region 6) as well as other Federal and state natural resource planners. The 12 factors were soils, geology, climate, vegetation, land use, ownership, topography, socio-economics, wildlife resources, water resources, mineral industry plans and land management plans. Each of the 400 data bases were evaluated in terms of subject, format, area of coverage, data vintage, spatial resolution, range of data reliability, cast and method of acquisition.

Location: 17.

77.205

Salmen, Larry; Nez, George; Reed, Carl; Hamill, John; Gropper, James; Federation of Rocky Mountain States, Inc. Denver, Co.. **User needs assessment for an operational geographic information system: Region 6, U.S. Fish and Wildlife Service,** PB-269 274/7ST.,.

Abstract: This report documents the results of a five month survey of user needs for a geographic information systems within Region Six of the U.S. Fish and Wildlife Service (FWS). The overall project, of which this is the first report, is intended to develop an operational capability within the Fish and Wildlife Service to accept, store, manipulate and display spatially related data for use in a variety of FWS wildlife resource impact projects. This report covers three user groups: this task focuses on the assessment of three groups of users: (1) the Denver Region Six Offices of FWS, (2) the Billings Area Office within Region Six, and (3) the Office of Biological Services Special Projects. Some twenty individual user offices were interviewed with structured questionnaires and follow-up sessions to identify their legislative mandates, programs, tasks, work elements, and specific spatial data needs.

Location: 17.

77.206

Schlesinger, Jerry; Loveland, Thomas R.; Tessar, Paul A.; Cornwell, Sally Bay; **Landsat application of the South Dakota Land Resource Information System,** (at: Summary and highlights of the National Conference of State Legislatures' Legislative Workshop on State Uses of Statellite Remote Sensing No. 2) 1977.

77.207

Schneider, Fred E.; North Dakota Regional Environment Assessment Program, Bismarck. **File of archaeological sites in North Dakota. Final report,** PB-278 716/6ST, NDRR-77/02, 1977, Jan. 31.

Abstract: The project's goals were to organize and standardize existing files and records of archaeological sites and to provide maps illustrating the locations of archaeological sites. A bibliography was compiled at all published and unpublished references on North Dakota archaeology. The Bibliography has 346 entries of which 227 are published articles and 119 are unpublished articles. Key words are provided for all entries and abstracts are included for those references which contain an abstract. The project has resulted in organization, editing, and standardization of archaeological site records. The files have been arranged so that information retrieval is more expedient than in the past.

77.208

Seitz, Robert N.; Keefer, Randall L.; Button, Lola J.; Wilson, John M.; NASA. George C. Marshall Space flight Center, Huntsville, AL.. **Minicomputer-based land use information system,** (in: Photogrammetric engineering and remote sensing, Vol.43, no.6) (at: 43rd Annual Meeting, Proceedings of the American Society of Photogrammetry, held with the 37th Annual Meeting of the American Congress of Surveying and Mapping) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1977 pp.531-547.

Abstract: Describes a small land use information retrieval system called MINIS (Multi-purpose Interactive NASA Information System). MINIS has a generalized query language to allow retrieval from different kinds of data bases and can provide graphics output of overlay maps on a Tektronix graphics terminal. Discusses user experience, maintenance provisions, limitations, relation to other land use system, and implementation problems. Also considers the economics of minicomputer systems for local land use data retrieval and plotting systems.

Location: 05.

77.209

Seuffert, Peter; Gesellschaft Fur Math. Und Datenverarbeitung, St Augustin, Germany. **Application of line and character recognition in cartography,** (at: IEEE Comput. Society Conference on Pattern Recognition and Image Process Proceedings) (IEEE) 1977 pp.383-343.

Abstract: By means of combining image processing, character recognition and interactive computer graphics techniques a system has been developed for the acquisition of map data which is required by various urban and regional land-use systems. The system is described.

77.210

Shiryaer, E.E.; Tomlinson, Roger F., ed.; Moscow Institute of Surveying and Mapping, Moscow, U.S.S.R.. **Principle of construction of 'ASGPS-GEOGRAPHY', a single automatic system for gathering, processing and storing geographic information,** (at: Proceedings of the Commission on Geographical Data Sensing and Processing) (International Geographic Union. Commission on Geographical Data Sensing and Processing) 1977 pp.115-119.

Abstract: Presents the principles behind a proposed system for storage and retrieval of spatial data, which includes the standardization of hardware, of input data, and of storage and selected retrieval methods, the production of maps, the ability to process data from local to global information levels, and the need for a single universal algorithmic language.

Location: 01.

77.211

Simpson, R. Larry; Wellar, Barry S., ed.; Council of Maritime Premiers, Halifax, N.S.. Canada. Ministry of State for Urban Affairs. **Information systems inputs to policies: The Maritimes' experience,** (at: Information system inputs to policies, plans and programs/URISA 1977. Volume 1, Plenary papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.62-66.

Abstract: Discusses the use of information systems for decision-making in the Maritimes with reference to two projects: LRIS, a cadastral system, and MRMS, and information service for users.

Location: 18.

77.212

Stuve, Horton; Army Engineer Waterways Experiment Station, Vicksburg, MS.. **Automated procedure for slope map construction. Volume Description and instructions for use of the automated procedure. Final report 1 June 75 - June 76,** AD-A047 794/3ST, WES-TR-M-77-3-VOL-1,.

Abstract: An automated procedure for constructing slope maps was developed and demonstrated in this study. The procedure consists of three sequential parts: (1) inputs of surface elevation values by means of a matrix of elevation values referred to as an elevation grid array, (2) calculation of slope magnitutes and directions by the computer programme SLOPEMAP, and (3) construction of slope maps using various SLOPEMAP output products. The form of input elevation data selected for use by SLOPEMAP to be prepared in advance of program execution is an orthogonal two-dimensional matrix, each element of which is the elevation of the topographic surface at that matrix (or grid) point. At run time, SLOPEMAP inputs these elevation values and calculates the slope magnitude and direction of each input grid point by employing approximation methods that use the elevation values of the grid point in question and its nearest and next nearest neighbors. Then, depending on the selected user options, the calculations are recorded or displayed in one or more of the following forms: (1) printer swath dumps, (2) magnetic tapes, (3) punched cards, and/or (4) drum or cathode ray tube (CRT) graphic plots that delineate slope classes selected by the user.

77.213

Svatos, Vern C.; Goehring, Darryl; **Capability mapping as a means of improving environmental quality: Prerequisites and methods,** (New Castle County Areawide Waste Treatment Management Program) 1977, July.

77.214

Taylor, D.R.F.; Watkin, J.E., ed.; Lipsett, F.R.; Carleton University, Ottawa, ONT.. **Geographic information systems in Canada,** (at: Proceedings of the Workshop on Mapping and Related Applications of Computers to Canadian Police Work) (National Research Council of Canada) 1977 pp.71-78.

Abstract: Places the application of computers to Canadian police work in the wider perspective of geographic information processing in Canada, and explores the possibilities of interlinkages between various systems currently being developed. Geographic information processing is being developed at various levels and for various purposes and there is a need for reducing the duplication of effort and for a greater degree of cross fertilization.

77.215

Taylor, D.R.F.; Douglas, David H.; Carleton University. Department of Geography, Ottawa, ONT.. University of Ottawa. Department of Geography and Regional Planning. **Graphic perceptions of language in Ottawa-Hull,** (at: Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Capital Geographic Information Processing Group) (University of Ottawa. Department of Geography and Regional Planning) 1977 pp.35-40.

Abstract: Outlines methodology relating to current programmes in data display for improving map communication capabilities by using three-dimensional maps, seen from various viewpoints for mapping socio-economic data.

Location: 01.

77.216

Taylor, D.R.F.; Carleton University, Ottawa, ONT.. **Introduction: Computer cartography in Sweden and Canada,** (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.1-6.

Abstract: Describes in general terms the development and current status of computer cartography and GIS in Sweden and in Canada.

Location: 15.

77.217

Texas Natural Resources Information System. **Texas Natural Resources Information System,** ED-149 774, NR-01210-01,.

Abstract: Descriptions are given for the 164 computerized files that comprise the Texas Resources Information System (TNRIS). The System provides natural resources information to federal, state, regional, and local and private entities. File descriptions are organized under the following data and information content areas: (1) base data, (2) meteorological resources, (3) biological resources, (4) water resources, (5) geologic and land resources, and (6) socio-economic resources. Each file description includes the file name, unique file number, narrative description of file contents, state agency responsible for collecting file data, geographic coverage, frequency of update, units of measurement, and data retrieval publications (i.e., procedures manual). A summary table listing special characteristics, availability of reports, and data processing method for each file is included.

77.218

Thomas, Hugo F.; Connecticut. Department of Environmental Protection. **Establishing the land use data base,** (at: Soil Conservation Society of America National Symposium) 1977.

Abstract: The natural resources center of the Connecticut Dept. of Environmental Protection is charged with producing and collating natural resource baseline data in a central disseminating system for departmental units and other state and local agencies. The Connecticut natural resource data base, dissemination, and data applications are described.

77.219

Tilmann, S.E.; Enslin, W.R.; Hill-Rowley, R.; Michigan State University, Remote Sensing Project. East Lansing, MI.. **Computer software system for integration and analysis of grid-based remote sensing data with other natural resource data. Paper 77-103,** (at: 43rd Annual Meeting of the American Society of Photogrammetry, held with the Thirty-seventh American Congress on Surveying and Mapping Meeting) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1977.

Abstract: Describes a computer-based information designed to assist in the integration of commonly available spatial data for regional planning and resource analysis, the Resource Analysis Programme (RAP). Discusses analytical and mapping capabilities of RAP with a study conducted in Windsor Township, Easton County, Michigan. For this study, soil, land cover/use, topographic and geological maps were used as a data base to develop an eleven map portfolio for land/use, non-point water pollution, waste disposal, and ground water recharge.

Location: 10.

77.220

Timchuk, N.F.; Lihvar, V.A.; Tomlinson, Roger F., ed.; U.S.S.R. State Scientific Research Centre, Kiev, U.S.S.R.. **Information systems in regional planning,** (at: Proceedings of the Commission on Geographical Data Sensing and Processing) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1977 pp.129-132.

Abstract: Discusses the need for an information system, for regional planning which can apply to various levels of regions (republics, economic regions, provinces, towns) and the principles involved in the development of such a system with respect to data structure input and output formats, and provides an example of location a production allocation within a given region using an algorithm for choosing locations.

Location: 01.

77.221

Tom, Henry; **Automated agricultural dot mapping in You can't take a census without geographic support,** (at: Proceedings of the 73rd Annual Meeting of the Association of American Geographers) 1977.

77.222

Tomlinson, Roger F., ed.; **Proceedings of the Commission on Geographical Data Sensing and Processing, Moscow, U.S.S.R., 1976,** (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1977.

Abstract: A collection of papers which reviews the recent (1976) developments in gathering and handling of geographic data, especially with respect to the development of GIS and their use as a basis for regional and national planning

Location: 01.

77.223

Tomlinson, Roger F., ed.; Simonett, D.S.; Steiner, Deiter; International Geographical Union. Commission on Geographical Data Sensing and Processing. **Roles of remote sensing applications and geographic information systems in national development 1976-80,** (at: Proceedings of the Commission on Geographical Data Sensing and Processing) (International Geographical Union. Commission on Geographical Data Sensing and Processing) 1977 pp.133-136.

Abstract: Concerns the potential importance of remote sensing in governmental and international management decision-making and the improvements possible if remote sensing data are included in GIS, given the wide range of information available from remote sensing.

Location: 01.

77.224

Traylor, Charles T.; **Human element in digitizing,** (at: Proceedings of the American Congress on Surveying and Mapping, Fall Technical Meeting, Little Rock. AR.) (American Congress on Surveying and Mapping) 1977.

77.225

Uhrin, David C.; Bureau of Mines, Pittsburgh, PA.. **Correlating microfilm mine maps with topographic maps,** PB-274 977/6ST, BuMines-IC-8762,.

Abstract: Two improved methods have been developed to transfer microfilmed mine maps to suitable base maps showing surface features. The methods provide for (1) positioning and orienting maps, (2) merging adjacent maps, and (3) plotting maps at a common scale. One method produces an overlay mosaic of mine maps using an integrated camera-processor. This photographic method shows the details of mine workings and is most useful for specific limited-area projects. In the second method, outlines of mine maps are digitized, manipulated, and plotted as overlays using a computer. This computer method car plot mine outlines and spatially index large numbers of microfilmed maps. Microfilmed mine maps used in this Bureau of Mines study are on file in the Mine Map Repository of the Eastern Field Operations Center. The base maps are U.S. Geological Survey 7.5 minute topographic maps. The demonstration area is located in the New Kensington East and West quadrangles, Pennsylvania.

77.226

United States. Defense Mapping Agency. **Product specifications for digital landmass system (DLMS) data base**, PS/ICD (EFG) 100, (United States. Defense Mapping Agency) 1977, July.

77.227

USGS Topographic Division Digital Applications Team. **Computers files and attribute codes for digital line graphs**, (USGS Topographic Division) 1977.

77.228

United States. Geological Survey. Topographic Division. Digital Applications Team. **Computers files for digital elevation models**, (United States Geological Survey. Topographic Division) 1977.

77.229

Van Driel, J. Nicholas; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Computer mapping for guiding suburban development**, (in: Ekistics, Vol.44, no.264) 1977, Nov. pp.266-.

Abstract: The application of earth science information to land use planning through the use of computer composite mapping is described. Data on the geologic environment of Fairfax County was collected, interpreted, and integrated by geologists and provided to planners for a comprehensive planning oriented view of the county. Environmental issues discussed include unstable slopes, sand and gravel resources, flood prone areas, vegetation, and artificial fill. These conditions were analyzed with computer mapping.

Location: 07,20,28,36.

77.230

Van Wie, P.H.; **AOIPS water resources data management system**, NAS/GFSC-X-031-77-38, (series: NASA/GFSC reports), (NASA) 1977, Feb..

77.231

Vasmut, A.S.; Tomlinson, Roger F., ed.; Moscow Institute of Surveying and Mapping, Moscow, U.S.S.R.. **Some aspects of creation and functioning of automated geographic information systems**, (at: Proceedings of the Commission on Geographical Data Sensing and Processing) (International Geographical Union Commission on Geographical Data Sensing and Processing) 1977 pp.121-127.

Abstract: Considers the principles involved in the creation of a GIS in terms of requirements in digitizing spatial data, data file structuring, data retrieval methods, and cartographic output methods.

Location: 01.

77.232

Walesh, Stuart G.; Kawatski, Lois A.; Clavette, Paul J.; Southeast Wisconsin Reg. Plann. Comm., WI.. **Land Data Management System for resource planning**, (in: Journal of Water Resources Planning. Management Division of the American Society of Civil Engineers, Vol.103, no.2) 1977, Nov. pp.177-192.

Abstract: Describes five practical applications of land DMS: graphic and tabular display of data, delineation of environmental corridors, formulation of diffuse source pollution abatement alternatives, assembly of input data for hydrologic-hydraulic models, and preparation of report artwork. Systems such as the Land DMS can optimize the use of the available data base and thereby substantially contribute to the quality of the decision making process in land and water resources planning.

Location: 20.

77.233

Waller, R.A.; Monash, E.A.; Lohrenz, J.; Los Alamos Scientific Laboratory, Los Alamos NM. **Computerized graphic technical applications for federal mineral lease management support,** LA-UR-77-583, CONF-770335-1,.

Abstract: Management reports related to the regulation and status of Federal mineral leases are excellent applications for computer graphics. The Los Alamos Scientific Laboratory employed and developed a variety of computerized graphics techniques to display technical products about Federal mineral leases. These analyses use data and models from and for the Geological Survey. Many of these graphic technical products use color to communicate more effectively the results relevant in making technical and management decisions. Selected sample color graphic technical products are presented along with a review of the supporting ADP configuration. The technical products include a map showing the status of Federal mineral leases, a color-coded matrix of correlation coefficients, color-coded multiaxis graphs, Fourier series and Chernoff face representations of multi-dimension data, geographic maps of Federal mineral leases, and a color computer-generated movie which illustrates the simulated behavior of a gas-water reservoir through time. Input for these technical products are the Lease Production and Revenue (LPR) data bases and an assumed reservoir model. These computer graphics products fulfill some continuing and obvious needs for management reports about Federal mineral leases. There is, however, another application that is perhaps even more important than the production of finished management reports which are concise, effective means of communicating information. The management reports must, if they have credibility, be based on data bases that are complete in quantity and superior in quality of data. Our experience shows that computer graphics techniques can be useful in checking both the quantity and quality of the data in complex data bases.

77.234

Watesson, Olof; Central Board for Real Estate Data, Gavle, Sweden. **Computer cartography and geographic information systems in Sweden: A synopsis,** (in: Canadian cartographer: Supplement No. 2. Computer cartography in Sweden. Papers selected from a Swedish Seminar on Geographic Information Systems, Vol.14,) pp.7-9.

Abstract: Provides a general review of GIS in Sweden, the agencies involved, and the types of systems.

Location: 15.

77.235

Weaver, Frederick M.; Anochie, Ononeze M., ed.; F.M. Weaver Associates, Incorporated, Charlotte, N.C.. International City Management Association. **Geoprocessing capability transfer,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.485-499.

Abstract: Discusses the transfer of the City of Charlotte geo-system to the City of Newark in support of police computer-assisted dispatching and to the City of Shreveport to serve as the principal base for a geographic information system. Reviews the results of these transfers and presents specific comments on the state-of-the-art in technology transfer. Costs associated with transfers, benefits to the transferee, technical considerations and local issues controlling technology transfer are discussed. The role of the transfer agent as a catalyst is identified.

Location: 07.

77.236

Weaver, Frederick M.; Wellar, Barry S., ed.; F.M. Weaver Associates, Incorporated, Charlotte, N.C.. Canada. Ministry of State for Urban Affairs. **Micro Map System (MMS): Low cost, on-line GBF/DIME maintenance,** (at: Information system inputs to policies, plans and programs/ URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.258-268.

Abstract: After reviewing currently available technology, the Micro Map System design is presented to illustrate specific application of the technology to a problem of general interest -- GBF/DIME file maintenance. Concluding comments look ahead to anticipate developments in the electronics industry and suggest potential impact in geoprocessing applications.

Location: 18.

77.237

Weiss, Alfred; United States. Bureau of Mines, Washington, D.C.. **Data base-oriented planning systems - new challenges and opportunities in the mineral industry,** (at: Applications of computer methods in the mineral industry. Proceedings of the 14th Symposium) (AIME, Society of Mining Engineers) 1977 pp.412.

Abstract: A conceptual framework for a management information system which would serve as an integral part in the formulation of a strategic plan for minerals is presented. Responsibilities of the Bureau of Mines to collect, analyze, and disseminate information on the mineral base of the national economy are explained.

77.238

Weiss, C.C.; **Evaluation of the GIMMS computer mapping programme, Census field study cartographic series,** 1, (Statistics Canada) 1977.

77.239

White, Denis; **New method of polygon overlay,** (at: Proceedings of an Advanced Study Symposium on Topological Data Structures for Geographic Information Systems) 1977.

77.240

White, Marvin S. Jr.; **Cost of topological file access,** (at: Proceedings of Advanced Study Symposium on Topological Data Structures for Geographic Information Systems) 1977.

77.241

White, Marvin S. Jr.; Wellar, Barry S., ed.; United States. Bureau of the Census. Statistical Research Division. Canada. Ministry of State for Urban Affairs. **Performance of a topological file access system,** (at: Information system inputs to policies, plans and programs/ URISA 1977. Volume 3 Contributed papers. Papers from the Fifteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.249-257.

Abstract: The costs of constructing and operating an arithmetical model of a map are presented below. The model used is Arithmicon, a system that embodies the relevant principles of combinatorial topology and graph theory. Before the costs are presented, the necessary mathematical principles and their implementation in Arithmicon are briefly presented. With that background, costs are then disucssed. Finally, possible reduction in cost and limits to such reductions are considered.

Location: 18.

77.242

Yoeli, Pinhas; **Computer executed interpolation of contours into arrays of randomly distributed height-ponts,** (in: Cartographic journal, Vol.14,) 1977 pp.103-108.
Location: 20,28,36.

77.243

Wiesel, J.; **DIDAK - A digital image processing system,** (at: Proceedings, Symposium on Image Processing) 1977.

77.244

Williams, Charles M.; Anochie, Ononeze M., ed.; Georgia State University. Information Systems Department. International City Management Association. **Information retrieval from computer data bases using automatically digitized maps,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.477-479.

Abstract: Describes a method currently under development for the almost totally automatic retrieval of information from spatially keyed data bases. The system uses an automatic digitizer-scanner to transduce maps into computers. The system will permit the virtually automatic formation of one spatially oriented data base from another with a resolution largely dependent upon the accuracy of the maps involved and the degree of mismatch of their areal boundaries.

Location: 07.

77.245

Williams, Forrest B.; Anochie, Ononeze M., ed.; Battelle-Columbus Laboraties, Columbus, OH.. International City Management Association. **Development of a geographic information system for automated real estate assessment,** 0-916848-13-2, (at: Computers in urban and regional government/Information systems as services to citizens/URISA 1976. Papers from the Fourteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Information Systems Association) 1977 pp.538-545.

Abstract: Describes land records systems generally describes the chief functions of these systems comments on the GBF design and summarizes special considerations that are required of an information system that supports real estate assessment and meets the requirements of a Comprehensive, Unified, Land-Data System.

Location: 07.

77.246

Wills, Robert G.; **Graphic display of digital terrain data,** (at: Proceedings of the American Congress on Surveying and Mapping. Fall Technical Meeting) (American Congress on Surveying and Mapping) 1977 pp.477-491.

Abstract: Concerns the use of a single digital terrain data base to produce a range of data display types. Includes illustrations of data displays.

Location: 05.

77.247

Winter, Donald C., et al.; **Technology assessment of advances in scientific and technical information services,** PB-265-839, (XEROX Electro - optical Systems) 1977.
Location: 17.

77.248

Wood, Nat; **Super eyes in sky map land use data for State, counties,** (in: State and county administrator, Vol.2, no.6) 1977, June pp.10-13, 29.

Abstract: Describes the testing and use of the land use management information system (LUMIS) in Pierce County, Washington, and in the States of Washington, Oregon and Idaho. The LUMIS system provides interactive capability to facilitate use by planner of multiple data files. Includes discussion of use of landsat imagery and examples of system output.

77.249

Wood, Peter M.; University of California. Lawrence Berkeley laboratory. **Interactive display of polygonal data,** LBL-6490, CONF-7710100-1, (at: Proceedings of Symposium on Topological Data Structures for Geographic Information Systems) (Harvard University. Laboratory for Computer Graphics and Spatial Analysis).

Abstract: Interactive computer graphics is an excellent approach to many types of applications. It is an exciting method of doing geographic analysis when desiring to rapidly examine existing geographically related data or to dispaly specially prepared data and base maps for publication. One such program is the interactive thematic mapping system called CARTE, which combines polygonal base maps with statistical data to produce shaded maps using a variety of shading symbolisms on a variety of output devices. A polygonal base map is one where geographic entities are described by points, lines, or polygons. It is combined with geocoded data to produce special subject or thematic maps. Shading symbolisms include texture shading for areas, varying widths for lines, and scaled symbols for points. Output devices include refresh and storage CRTs and auxiliary Calcomp or COM hardcopy. The system is designed to aid in the quick display of spatial data and in detailed map design

Location: 17.

77.250

Wunderlich, Gene; **Computer-assisted land information system for a rural county: RAPLI-II,** PB-281088/5ST, (in: Agricultural information bulletin. No. 406,) (United States. Department of Agriculture. Economic Research Service. National Resource Economics Division) 1977, July.

Abstract: RAPLI-II is a simplified scheme providing land information common to several offices in a rural county government. It is based on a geographic identifier and three computerized land information files on ownership, transfers, and physical features of land. To test the technical and economic feasibility, an operational model system was built and compared to the concurrently functioning manual system. The system RAPLI-II, was technically feasible in the sense of generating legally required reports and economically feasible in the sense of reducing recordkeeping costs in local government.

Location: NTIS.

77.251

Yan, Joel; Witiuk, Sid W.; Fisher, Terry; Douglas, David H.; Canada. Department of Statistics. Spatial Systems Section. University of Ottawa. Department of Geography and Regional Planning. **Exchanging spatial systems technology: Related issues and a case study,** (at: Applications of geographic information processing. Papers presented at the Second Annual Symposium Workshop of the National Capital Geographic Information Processing Group) (University of Ottawa. Department of Geography and Regional Planning) 1977 pp.41-49.

Abstract: Documents some of the most significant problems encountered in a recent data transfer experiment and attempts to transform some of the lessons learned into general guideline which will hopefully benefit others contemplating similar exchanges in the future.

Location: 01.

77.252

Yoeli, Pinhas; **Computer executed interpolation of contours into arrays of randomly distributed height-ponts,** (in: Cartographic journal, Vol.14,) 1977 pp.103-108.

Abstract: ?

Location: 20,28,36.

77.253

Young, G.J.; Arnold, K.C.; **Orthophotomaps of glaciers, an elevation of an automated method applied to Peyto Glacier, ALTA.,** (in: Zeitschrift fur Gletscherkunde und Glazialgeologic, Vol.13, no.1/2) 1977 pp.99-110.

Location: 27.

77.254

Ziemann, Hartmut; Canada. National Research Council. **Data base for geographic referencing in a land data system,** (at: Proceedings of the 43rd Annual Meeting of the American Society on Photogrammetry, held in conjunction with the 37th American Congress on Surveying and Mapping Meeting) (American Congress on Surveying and Mapping) 1977 pp.469-477.

Abstract: Discusses requirements for geographic base files, and reviews present surveying and mapping activities which may contribute to cadastral systems. Also considers a solution for the creation of a GBF

Location: 05.

77.255

Zimmermann, R.H.; Dueker, Kenneth J.; University of Iowa, City, IA.. **Automated land use information system - Needs, possibilities, recommendations and problems,** (in: Photogrammetric engineering and remote sensing, Vol.43, no.6) 1977 pp.754.

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78.001

Aldred, P.J.; Gerritsen, J.G.; Marshall, G.; Mayhood, F.; Piepgrass, E.B.; City of Calgary. Management Systems Development Department. **Geographic referencing system. Stage 2- System proposal. Project 4.4. Phase 1,** (City of Calgary) 1978, June.

Abstract: Describes the aerial survey phase of a large railway engineering project with particular reference to the capture, storage and retrieval of Digital Terrain Model information. The various stages of the task are dealt with and details are given of data capturing hardware as well as storage and retrieval procedures.

Location: 01.

78.002

Allam, M.M.; **DTM's application in topographic mapping,** (at: Proceedings of the ASP DTM symposium) (American Society of Photogrammetry) 1978 pp.1-15.

Abstract: A new logging unit with an integrated system of surface instrumentation built around a computer allows digitally recorded logs to be merged, computed, and recorded on film at the wellsite. The processing is designed so that all required input parameters can be accurately selected from a first-pass merge. Field experience has shown the processing to be very flexible, providing results through North America in both sandstone and carbonate reservoirs.

78.003

Allam, M.M.; Canada. Surveys and Mapping Branch. Photogrammetrical Engineering Section, Ottawa, ONT.. **Role of the GPM-111 Interactive Mapping System in the digital topographic mapping program,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings of the International Symposium) (Canadian Institute of Surveying) 1978. pp.5-23.

Abstract: Presents a detailed, systematic method of describing volcaniclastic and associated rock types as onserbed in drill core or on surface exposures in a form both readable and readily keypunched for subsequent computer manipulation. Details provided form a small part of a comprehensive analytical scheme called 'GEOLOG System' which has been recently updated for detailed analysis of a wide diversity of data. on the Interactive Photogrammetric System. The merged planimetry and contour files are edited on-line by the interactive system and the output files are stored in the National Topographic Data Bank (NTDB) for the automatic production of scribed map overlays and other mapping, engineering, economic and statistical activities. systems

Location: 07.

78.004

Barnard, Joseph E.; **FINSYS - a tool for the processing of integrated resource inventory data,** (at: Integrated inventories of renewable natural resources! Proceedings of the workshop) (series: USDA Forest Service general technical reports), (Rocky Mountain Forest and Range Experiment Station) 1978 pp.332-335.

Abstract: Presents the reports of the six subcommittees set up by the Task Force to address the following concerns: 1) Need for small-scale mapping, 1:10 000 or smaller, 2) Need for large-scale mapping, 1:10 000 and larger but excluding engineering scales, 3) Need for and potential of computer assisted production systems, 4) Need for coordination, 5) Need for legislation, and 6) Funding an expanded base mapping programme. These tasks were to be viewed in the context of providing adequate cost beneficial base mapping at a range of scales required for efficient planning, management and administration of provincial lands and economies.

78.005

Baumann, P.R.; State Univ. College of New York at Oneonta. **ISO: A Fortran IV program for generating isopleth maps on small computers**, (in: Computers and geosciences, Vol.4, no.1) 1978 pp.23-32.

Abstract: Describes the Agricultural Research Service's Special programmes for making hydrologic data available to all users: the compilation and publication of annual volumes of data summaries together with watershed characteristics and the development and operation of a centralized storage and retrieval system for ARS hydrologic date. Discusses systems using by ARS to standardize, store, safeguard, retrieve and disseminate hydrologic data.

Location: 20, 27, 33.

78.006

Belling, George E.; Photosurveys (Pty) Ltd., Braafontein, South Africa. **Railway route selection - limited exercise in data banking and retrieval**, 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.275-283.

Abstract: To facilitate the efficient handling of large volumes of information generated by logging exploration drill cores, a computer data bank system (GEOBANK) has been developed to store and retrieve the normally difficult to handle geologic information as well as the physical testing data. The initial concept of GEOBANK was developed specifically for U.S. steel's coal exploration-drilling program. However, the system can be generalized easily for use with other exploration programs.

Location: 07.

78.007

Bennettson, A.V.; **Computer aids for map-based record systems**, (at: Proceedings of the Fifteenth Annual Design Automation Conference) (IEEE) 1978 pp.34-47 .

Abstract: Describes a family of computer algorithms developed at the university of Guelph to derive quantitative data and topographic and thematic maps from dense digital terrain models. The sources of such models are discussed briefly, and the rules that have been adopted for generating anew programmes are described. Some of the programmes derive completely new quantitative and qualitative descriptors of the terrain, and all of them are intended for operations on (105) to (107) points or more. Finally a new geocoding algorithm is described for deriving thematic maps from arbitrary combinations of topographic and thematic data from a wide variety of sources.

78.008

Berlinguette, G.E.; Taylor, D.R.F., ed.; Carleton University, Ottawa, ONT.. **Geographical information system of the National Capital Commission: A summary of recent changes, Recent trends in geographic information processing in the National Capital Region**, 0-7709-0040-2, (at: Symposium on Geographic Information Processing) 1978, May pp.26-27.

Abstract: Describes the Central Property Register in terms of its background and objectives which include: having property data retrievable by property address, providing a uniform display access system for all property data, allowing geographic retrieval and updating. Discusses how the Master Address File, a geographical referencing component of the Register, has been designed and implemented to achieve these objectives.

Location: 19.

78.009

Besenicar, Jure; Institute of Geodetski zavod SRS, Ljubljana, Yugoslavia. **Digital map revision**, 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.221-232.

Abstract: The Integrated Photogrammetric Instrument Network (IPIN) is being designed and developed by the Defense Mapping Agency Aerospace Center to meet database demans for terrain elevation information. PIN is a network of computers and instrumentation dedicated to digitizing and editing photo-source terrain data. The procedure of interest involves smoothing raw data that have been collected by the operator of an analytical stereoplotter. When digitizing geomorphic features from aerial stereophotographs, the double-line drain (DLD) presents special problems. The digitizing of an DLD, a relatively broad river or stream, requires specifying ripples (x,y,z) latitude, longitude, elevation at points spaced along the length of each shoreline. The drain boundaries thus collected usually have acceptable lattitude and longitude values. The elevation values, however, require smoothing.

Location: 07.

78.010

Best, D.L.; Gardner, J.S.; Dumanoir, J.L.; Schlumberger Well Serv., Houston, TX.. **Computer-processed wellsite log computation,** (at: Trans. SPWLA 19th Annual Log. Symp.) (Society of Prof. Well Log Anal.) 1978 pp.7.1-7.32.

Abstract: Folk County has attempted to overcome many of the known pitfalls of geographic systems by designing a parcel based system that makes use of an existing data file, provides for ease of programming through a commercial package and provides for maintenance of the final file on a semi automated basis. This report centers on the development stages and the problems and successes, to date.

78.011

Bie, Stein W., Ed.; **Computer mapping for resource analysis,** (in: COGEODATA newsletter, Vol.4, no.3) 1978, July.

Abstract: MUSGS in preparing for volume production of digital elevation data, has come across several issues in automated mapping. The dividing line between the functions of data collection and data application is a primary planning parameter for any digital data facility and that line is generally indefinite and subject to a wide range of interprelation. On the technical side, the relative merit of various file structures for digital elevation data is still a much debated subject among specialists. There are no established standards of accuracy or guidelines for measuring it.

78.012

Bier, R.A. Jr.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **On-demand computer cartography and its effect on map libraries,** (in: Special librairies, Vol.69, no.2) 1978, Feb. pp.61-65.

Abstract: An advanced distributive system of analytical stereoplotters is being developed for the U.S. Defense Mapping Agency Aerospace Center. This system called IPIN is composed of manual and automatic stereoplotters for collection, hardware to handle all data processing, and an edit system to review and edit the digitial files. A description of each component, its developmental status and its expected completion is the subject of this presentation.

Location: 05, 06, 09, 10, 12, 19.

78.013

Blanchet, P.H.; Godwin, Colin I.; **GEOLOG: Detailed description of rocks associated with volcanogenic deposits,** (in: Western miner, Vol.51, no.2) 1978, Feb. pp.41-44.

Abstract: Digital terrain data is produced at the Defense Mapping Agency Aerospace Center for a wide variety of products, including input to radar simulators, guidance systems, and automated cartographic systems. This data is collected from source maps using the Lineal Input System and from stero-pairs of photographic imagery using optical correlation processes. In order to facilitate the display of these data bases for analysis, the Aerospace Center has developed the capability for the computer generation of digital image displays of the terrain data in the form of gray level elevation coding, contouring, shaded relief, and simulated perspective vies and stereo-pairs. Technique schematics and examples of the above are presented.

Location: 02, 05, 10, 12, 20, 21, 22, 23, 24, 25, 27, 33, 34.

78.014

Blumberg, Maurice H.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; IBM Federal Systems Division, Gathersburg, MD.. **Design considerations for geoprocessing systems in light of current technology**, (at: Data resources and requirements: Federal and local perspectives /URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual COnference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.108-121.

Abstract: An efficient algorithm for displaying 3-D scenes showing a discrete spatially varying surface is described. A prism is erected on each polygon with height proportional to the attribute. The resulting 3-D scene is plotted with shading and hidden lines removed. Thus the spatial variation of the attributed may be quickly and intuitively grasped by the nontechnical observe. This has applications to areas such as geography if the map is a cartographic map, or to physics if the map diagrams the periodic table. Most of the calculations can be done without knowing the prism heights so extra plots with different attributed for the prisms can be produced quickly. This algorithm has been implemented and tested on maps of up to 12000 edges.

Location: 18.

78.015

Bohl, Frederick L.; Ann Arbor City Planning Department. **Development of an urban information system: The Ann Arbor experience,** (in: Urban systems, Vol.3, no.1) 1978 pp.39-51.

Abstract: Reviews the experience of Statistics Canada in the development of environmental statistics, briefly summarizing the issue of introducing environmental factors into the National Accounts. Also discusses alternative approaches being developed in Statistics Canada.

Location: 17.

78.016

Bonnor, G.M.; Canada. Department of the Environment. Forest Management Institute. Forest Resource Data Programme. **Pilot study for Canadian Forest Resource Data System,** FMR-X-122, (series: Forest Management Institute information report), (Canada. Department of Environment. Canadian Forestry Service. Forest Management Institute) 1978, Dec..

Abstract: Describes three systems in use within the U.S. Forest Service which use Digital Terrain Data DTD) as source material. TOPAS Topographic Analysis System) was developed in-house in 1975 and is used by resource managers to evaluate impacts of alternate land uses on National Forest lands. Digital Terrain Information System DTIS) is a secondary set of programmes within TOPAS that has been enhanced to handle more rigorous analyses related to site specific projects, often involving engineering reconnaissance and design. Method of Scenic Alternative Impacts by Computer (MOSAIC) is a photomontage system that employs computer graphics to depict proposed landscape alternations to overlay on a terrestrial photography of existing area. The basic features of each system, and the primary uses of output products are discussed.

Location: 01.

78.017

Bouille, Francois; **Future directions - Harvard papers on geographic information systems. Volume 1,** (Harvard University. Laboratory for Computer Graphics and Spatial Analysis) 1978.

Abstract: The ADAPT geographic information system is a computerized system and data base for storing terrain and other spatially arrayed information required for engineering planning and design models. Sewer design models which directly access and use the ADAPT data base have been developed, thus enhancing the ability to examine a wide range of altenatives. A broad scale planning model provides cost and design information for large scale regional networks specified by an engineer. A detailed sewer design model uses a dynamic programming algorithm to determine the least cost detailed sewer design for alternative networks specified by an engineer. The models provide a variety of graphic and tabular output useful in analysis of the designs.

78.018

Bracken, P.A.; Van Wie, P.H.; Dalton, J.T.; **Computer mapping software on the AOIPS,** (at: Harvard University International User's Conference on Computer Mapping Software and Data Bases) 1978, July.

Abstract: The K-Division Retrieval System (KRS) is a group of programmes and files maintained by the Lawrence Livermore Laboratory to store and recall data about the geology and events at the Nevada Test Site. KRS consists of two large data files that are regularly updated with new information. This report describes these data files and the interaction necesary to use the specialized programmes, obtain access to the information, and arrange the data reports. These programmes are run on CDC-7600 computers and are available in public files.

78.019

Brassel, Kurt E.; Utano, Jack J.; State University of New York at Buffalo. Geographic Information Systems Laboratory. **Computer program for quasi-continuous choropleth maps,** (at: Proceedings of the American Congress on Surveying and Mapping 38th Annual Meeting (Technical Sessions)) (American Congress on Surveying and Mapping) 1978 pp.1-3.

Abstract: Describes the data processing software developed at the Central Transportation Planning Staff (C.T.P.S.) for the analysis of origin-destination surveys, and other spatial data. The system consists of two components, one for assigning geographic zone information traffic zone, school district, police precinct, census tract to data based on addresses "geocoding" and the second for using the geographic base file (GBF)/DIME file to provide source map information for producing computer-generated maps.

Location: 05.

78.020

Brassel, Kurt E.; State University of New York at Buffalo. Geographic Information Systems Laboratory. **Manipulation processes in computer cartography,** (at: Proceedings of the IEEE Computer Society Conference on Pattern Recognition and Image Processing) (Institute of Electrical and Electronics Engineers, Inc.) 1978 pp.214-219.

Abstract: Reviews data manipulation in automated mapping. Discusses mapping symbology, and data displat procedures and issues.

Location: 16.

78.021

Bright, C. Richard; Pywell, H. Ross; Autometric Inc., Arlington, VA.. **Data base development for national wetlands inventory,** (at: 44th Annual meeting. Proceedings of the American Society of Photogrammetry) (American Society of Photogrammetry) 1978 pp.329-334.

Abstract: Describes a data base system for storing and retrieving digitized geographical data used by the U.S. Fish and Wildlife Service to handle wetlands data. The information is stored on the basis of geounits defined geographical areas). The programme will generate reports on wetland areas and quadrangle plots using a high speed digital plotter. The data base system also supports aerotriangulation and digitizing stations for generating wetlands information. Details for constructing and interrogating the data base are given. The system may be generalized to produce digital overlays of roads, vegetation, and other topographical information.

78.022

British Columbia. Task Force on Mapping Requirements. **Report of Mapping Requirements Task Force 1978,** (British Columbia. Ministry of Environment) 1978, Oct..

Abstract: Presents the reports of the six subcommittees set up by the Task Force to address the following concerns: 1) Need for small-scale mapping, 1:10 000 or smaller, 2) Need for large-scale mapping, 1:10 000 and larger but excluding engineering scales, 3) Need for and potential of computer assisted production systems, 4) Need for coordination, 5) Need for legislation, and 6) Funding an expanded base mapping programme. These tasks were to be viewed in the context of providing adequate cost beneficial base mapping at a range of scales required for efficient planning, management and administration of provincial lands and economies.

Location: 01.

78.023

Brockmeier, Lance; Rhode Island University. Center for Ocean Management Studies, Narragansett. **Information systems for coastal zone management**, PB-992 180/7ST,.

Abstract: A workshop in Information Systems for Coastal Zone Management was sponsored by the University of Rhode Island's Center for Ocean Management Studies and was held on June 22-23, 1978. The objectives of the workshop were to discuss: (1) the role of existing management systems in coastal resource planning and management, (2) how information systems may be designed or modified to help states meet their legal, technical, and economic goals for coastal zone management, (3) why certain systems are successful and others fail to meet the planner's needs for information, (4) the extent to which information systems provide interagency/inter-disciplinary cooperation, (5) the potential long-range benefits of information systems, and (6) how much, what kind, and in what form is information needed. The agenda for the two-day workshop was designed to develop an overview of the information systems that presently exist on the local, state, regional and national scale.

78.024

Brooks, Kristina M.; Pease, James R.; Environmental Impact Assessment Project. UNITED STATES. DEPARTMENT OF AGRICULTURE.. **Geographic information systems: A review**, Pb-290 748/3ST, SR-517, (series: Environment impact), (Oregon State University. Extension Service).

Abstract: The first section is a description of the following characteristics of geographic information systems: 1) data collection, 2) transformation of the data into machine readable form, 3) editing and updating of the data files, 4) storage of the data, 5) computer analysis or manipulation of the data, 6) retrieval of entire files or selected portions of one or several files, 7) generation of a variety of output including maps, charts, and statistical reports. The second section contains profiles of the following geographic information systems: 1) Geographic Data System: 2) Gridded Resources Inventory Data System: 3) METLAND/COMLUP: 4) Multiple Input Land Use System MILUS): 5) Natural Resource Information System/Illinois Resource Information System MARIS/IRIS): 6) Polygon Information Overlay System PIOS II): 7) PTOLOMY: 8) Oak Ridge Regional Modeling Information System ORMMIS). The report also contains an annotated bibliography of geographic system surveys (section three), and a glossary (section four).

Location: 05,17.

78.025

Brown, Dennis; Ontario. Ministry of Health. Ambulance Services Branch. **OASIS,** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.42-46.

Abstract: Describes the Ontario Ambulance Services Information System (OASIS)-a management information system which is used to aid the planning of resource allocation and is also a historical file of ambulance services in Ontario. Discusses the benefits of the system and problems encountered with particular emphasis on the need for common geographical referencing.

Location: 01.

78.026

Brunson, E.B.; Olson, R.W.; **Data digital elevation model collection systems,** (at: Proceedings of the Digital Terrain Models DTM Symposium. American Society of Photogrammetry) 1978.

78.027

Burford, J.B.; Clark, J.M.; United States. Department of Agriculture. Agriculture Research Service, Beltsville, MD.. **Hydrologic data bank activities. paper 77-4542,** (at: ASAE Winter Meeting) (ASAE) 1978.

Abstract: Describes the Agricultural Research Service's Special programmes for making hydrologic data available to all users: the compilation and publication of annual volumes of data summaries together with watershed characteristics and the development and operation of a centralized storage and retrieval system for ARS hydrologic date. Discusses systems used by ARS to standardize, store, safeguard, retrieve and disseminate hydrologic data.

78.028

Calogero, V.; Barth, K.; Athanassoulis, G.; University College, London, England. **Storing and retrieving locational data,** (in: Computer aided design, Vol.10, no.4) 1978, July pp.249-256.

Abstract: Discusses a concept for storing and retrieving geographic data, and two packages, one in FORTRAN, the other in BASIC for minicomputers have been implemented. Each package was developed for machine independence, and is suitable for a whole range of applications ussng locational data for planning and design. The FORTRAN package is used for highway location studies and interpolating ground heights for highway design.

Location: 06,20.

78.029

Canada. Department of Energy, Mines and Resources. Canadian Institute of Surveyors. Commission 4. of the International Society of Photogrammetry. **New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium. Ottawa, ONT., Oct. 2-6, 1978,** 0-919088-05-8, (Canadian Institute of Surveying) 1978.

Abstract: Various papers which, when combined, present an overview of the current (1978) status of computer applications in mapping, and provide indications of future trends.

Location: 07.

78.030

Canada. Statistics Canada. Standards Division. **System of geographical classifications,.**

Abstract: Describes a package of geographical referencing standards and coding tools developed by Statistics Canada. Discusses updating, data matching and data referencing conversions.

Location: 01.

78.031

Chamard, Roger R.; United States. Forestry Service. Geometronics Service Center, Salt Lake City, UT.. **Automated mapping procedures at the U.S. Forest Service Geometronics Service Center,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.52-66.

Abstract: Describes automated mapping for U.S. Forest Service. The map revision process is automated in that revision data is compiled on the stereoplotter in the form of magnetic tape for auto plotting on a precision flatbed plotter. Special topographic data is acquired from aerial photographs for automated plotting of various products for use in designing engineering works and plotting of various thematic layers necessary for decision making in the management of National Forests. Covers the wide aspects of digitizing methods, software availability, and output product samples of the Center.

Location: 07.

78.032

Chappas, Walter J.; NOAA, Office of Aeronautical charting and Cartography, Rockville, MD.. **National Ocean Survey's cartographic data base forecasts,** (at: Proceedings of the American Congress and Surveying and Mapping 38th Annual Meeting (Technical Sessions).) (American Congress on Surveying and Mapping) 1978 pp.284-289.

Abstract: Describes the present manual cartographic processes of the National Ocean Survey (NOS), the uses of the products produced by these processes, current production problems, impact of new requirements, NOS plans for cartographic data bases, and present requirements for the future benefits of digital data bases in the NOS.

Location: 05.

78.033

Charles River Associates, Inc. Boston, MA.. **On the development of a theory of traveller attitude-behavior interrelationships. Volume 3,** PB-286665, DOT-TSC-RSPA-78-14-VOL-3, (Charles River Associates, Incorporated).

Location: 17.

78.034

Chrisman, Nicholas R.; **Concepts of space as a guide to cartographic data structures,** (in: Harvard papers on geographic information systems, Vol.7,) 1978.

78.035

Chun, Dan; U.S. Steel Corp. Res. Lab., Monroeville, PA.. **Data bank for geologic field work (GEOBANK) and extension,** (in: Mining engineering (New York), Vol.30, no.9) 1978, Sept. pp.1320-1325.

Abstract: To facilitate the efficient handling of large volumes of information generated by logging exploration drill cores, a computer data bank system (GEOBANK) has been eveloped to store and retrieve the normally difficult to handle geologic information as well as the physical testing data. The initial concept of GEOBANK was developed specifically for U.S. steel's coal exploration-drilling program. However, the system can be generalized easily for use with other exploration programs.

Location: 20,21,33.

78.036

Clark, John R.; Elder, Evie, ed.; University of California. Geography Department. **APL based system for teaching computer cartography,** (at: Proceedings of the American Congress on Surveying and Mapping, 1978 Fall Technical Meeting (Fall Convention)) (American Congress on Surveying and Mapping) 1978 pp.91-94.

Abstract: Describes an attempt to teach automated mapping using APL.

Location: 05.

78.037

Coan, Gerry; Kevany, Michael J.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; New Community Development Corp. (HUD), Washington, D.C.. **Interactive graphic systems in land use planning: Progress and prospects,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.152-163.

Abstract: Discusses the advantages and special requirements of interactive graphic systems, cites several successful applications, and recommends a prototypic list of hardware and software components.

Location: 18.

78.038

Code, Robert; Ontario. Interministerial Committee on Geographical Referencing. **Information conundrum or position, the common thread,** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978 pp.4-16.

Abstract: Presents some of the problems with primarily land-related information that have been encountered or examined by several Ontario Government organizations. Discusses past, present and proposed solutions, with particular emphasis on the Interministerial Committee on Geographical Referencing.

Location: 01.

78.039

Collins, Stanley H.; University of Guelph. School of Engineering. **Algorithms for dense digital terrain models,** 0-919088-05-8, (at: New technology for mapping. Technology papers from commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.715-725.

Abstract: Describes a family of computer algorithms developed at the University of Guelph to derive quantitative data and topographic and thematic maps from dense digital terrain models. The sources of such models are discussed briefly, and the rules that have been adopted for generating anew programmes are described. Some of the programmes derive completely new quantitative and qualitative descriptors of the terrain, and all of them are intended for operations on (105) to (107) points or more. Finally a new geocoding algorithm is described for deriving thematic maps from arbitrary combinations of topographic and thematic data from a wide variety of sources.

Location: 01,07.

78.040

Colvocoresses, Alden P.; United States. Geological Survey, Reston, VA.. **Proposed parameters for an automated mapping satellite (Mapsat) system,** 0-919088-05-8, (at: New technology for mapping, technical papers from commission 4, Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.374-382.

Abstract: Landsats-1, -2, and -3, although not defined as mapping satellites, are in fact effectively recording the Earth in a form suitable for presentation as small-scale image maps. Mapping involves topography as well as planimetry, and a satellite compatible with the Landsat that also resolves the 3-dimensional mode of topography is proposed. Such a satellite requires very high stability and pointing accuracy. The satellite would be complementary to or could be combined with the operational Landsat previously proposed and it is suggested it be designated the Automated Mapping Satellite or Mapsat.

Location: 07.

78.041

Comarc Design Systems, San Francisco, CA.. **Successful applications of a geo-based information system,** (Comarc Design Systems) 1978.

78.042

Datlen, Andy R.; City of Toronto Management Services Department. **Central Property Register of the City of Toronto,** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept pp.137-147.

Abstract: Describes the Central Property Register in terms of its background and objectives which include: having property data retrievable by property address, providing a uniform display access system for all property data, allowing geographic retrieval and updating. Discusses how the Master Address File, a geographical referencing component of the Register, has been designed and implemented to achieve these objectives.

Location: 01.

78.043

Deecker, Gordon F.P.; Taylor, D.R.F., ed.; Canada. Statistics Canada. Spatial Research and Development Group. Carleton University, Ottawa, ONT.. **New developments in geo-carto-graphics at statistics Canada, Recent trends in geographic information processing in the National Capital Region,** 0-7709-0040-2, (at: Symposium on Geographic Information Processing) 1978, May pp.32-48.

Abstract: Documents some of the new systems currently in use for packaging 1976 Census data (GDMS, PILLAR and GIMMS) as well as describing systems under study for preparing the spatial framework for the 1981 Census (GUESS and AUTOMAP).

78.044

Degani, Avi; Tel Aviv University. Israel. **Spatial systems and automated geocartographic analysis,** (at: Proceedings of the Jerusalem Conference on Information Technology, 3rd) (North-Holland Publishing Company) 1978 pp.711-718.

Abstract: Spatial studies involving automated geocartographic analysis are increasingly utilized in a great variety of applications. Major theoretical problems at the present state of the art concern an unbalanced state between the present potential for compilation of spatial data and the analytical potential, conceptual difficulties in optimizing the role of hardware in research and application, and human related problems. These interrelated issues are discussed within the framework of a proposed national spatial information system for Israel, ISRAMAP. Some potential application of the system is demonstrated.

78.045

Deimel, L.E., Jr.; Doss, C.L., II; Fornaro, R.J.; McAllister, D.F.; Raulier, J.A.; North Carolina State University, Raleigh, N.C.. **Application of shape-preserving spline interpolation to interactive editing of photogrammetric data,** (in: Computer graphics (ACM), Vol.12, no.3) (at: Proceedings of the 5th Annual Conference on Computer Graphics and Interactive Technology. SIGGARAPH '78) 1978 pp.93-99.

Abstract: The Integrated Photogrammetric Instrument Network (IPIN) is being designed and developed by the Defense Mapping Agency Aerospace Center to meet database demans for terrain elevation information. PIN is a network of computers and instrumentation dedicated to digitizing and editing photo-source terrain data. The procedure of interest involves smoothing raw data that have been collected by the operator of an analytical stereoplotter. When digitizing geomorphic features from aerial stereophotographs, the double-line drain (DLD) presents special problems. The digitizing of an DLD, a relatively broad river or stream, requires specifying ripples (x,y,z) latitude, longitude, elevation at points spaced along the length of each shoreline. The drain boundaries thus collected usually have acceptable lattitude and longitude values. The elevation values, however, require smoothing.

78.046

Devereux, B.J.; **GRIP, a geographical retrieval and information processing package,** Vol.5, no.1/2 (series: Computer applications in the natural and social sciences), 1978.

78.047

Dole, W.E.; Jordan, N.F.; Exxon Prod. Res. Co., Houston, TX.. **Slope mapping,** (in: American Association of Petroleum Geologists bulletin, Vol.62, no.12) pp.2427-2440.

Abstract: Slope mapping emphasizes steep gradient zones instead of the usual highs and lows. Slope maps express the maximum slope, or maximum horizontal rate of change, in the data at a given point. This new emphasis on the slope often discloses important geologic information that was hidden or obscured on normal map presentations. Manual, computer and analog techniques for performing the slope-map operation are discussed.

Location: 02,09,10,20,21,25,26,27,28,31,33.

78.048

Douglas, David H.; Taylor, D.R.F., ed.; University of Ottawa. Department of Geography and Regional Planning. Carleton University, Ottawa, ONT.. **Towards more exotic products from thematic software: The case of the PILLAR system Programme, Recent trends in geographic information processing in the National Capital Region,** O-7709-0040-2, (at: Sympossum on Geographic Information Processing) 1978, May pp.51-61.

Abstract: Discusses thematic maps and their production by automated mapping in terms of hardware constraints, map communication, and mapping symbology.

Location: 19.

78.049

Downard, Allen F.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Polk County. Division of Development Coordination, Bartow, FL.. **Developing a low cost, high technology geographic information system,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.248-254.

Abstract: Folk County has attempted to overcome many of the known pitfalls of geographic systems by designing a parcel based system that makes use of an existing data file, provides for ease of programming through a commercial package and provides for maintenance of the final file on a semi automated basis. This report centers on the development stages and the problems and successes, to date.

78.050

Drysdale, F.R.; Wood, Peter M.; Calef, C.E.; Brookhaven National Laboratory. Upton, N.Y.. **Using computer-assisted cartography to map the U.S. Energy System,** LBL-7937, CONF-780749-1, (at: Harvard Computer Graphics Week Conference).

Abstract: Most descriptions of the United States energy system are aggregated to the state or national level, and are usually in prose, tabular, or flow-chart form. To improve our understanding as to where fuels are produced and used, and the effects of the U.S. energy system, a computer-generated atlas of several energy-related variables was produced for the country using the county as the basic mapping unit. Existing computer-mapping software was used by users new to the computer center as well as the software to produce color maps vividly displaying the heterogeneity of the U.S. energy system.

78.051

Dubuisson, Bernard L.Y.; Conservatoire National Arts-et-Metiers, Ecole Speciale des Travaux Publics, 20 Avenue Paul Appell, 75014 Paris, France. **Automated plotting through analytical processing of digital images extracted from photographs,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.67-92.

Abstract: Concerns a developmental system for fully automated mapping using stereo-orthophotography. Describes how the photogrammetric data is processed and some of the potential advantages of the system.

Location: 07.

78.052

Dutton, Geoffrey H.; Nisen, William G.; Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Expanding realm of computer cartography,** (in: Datamation, Vol.24, no.6) 1978, June pp.134-142.

Abstract: Examines the potential use of automated mapping in government and private industry. Discusses mapping data base development, data processing and data display and associated hardware and software.

Location: 01,02,03,05,06,07,08,09,19,20,24,25,26,27,28,36.

78.053

Dwinell, L. David; **Advances in information systems and services for the forestry community,** (in: Journal of forestry, Vol.76, no.2) 1978, Feb. pp.80.
Location: 09,10,20,28,32,34,35.

78.054

Elassal, Atef A.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Production facilities for digital elevation data,** 0-919088-05-8, (at: New technology for mapping. Technical papers for commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.93-101.

Abstract: MUSGS in preparing for volume production of digital elevation data, has come across several issues in automated mapping. The dividing line between the functions of data collection and data application is a primary planning parameter for any digital data facility and that line is generally indefinite and subject to a wide range of interprelation. On the technical side, the relative merit of various file structures for digital elevation data is still a much debated subject among specialists. There are no established standards of accuracy or guidelines for measuring it.

Location: 07.

78.055

Classal, A.A.; **United States Geological Survey digital cartographic file management system,** (at: Proceedings of the Digital Terrain Model (DTM) Sympsoium, American Society of Photogrammetry) 1978.

78.056

Eley, N.G.; University of British Columbia, Vancouver, B.C.. **Replication of natural topographic features,** (at: Numeric Control Society Proceedings 15th Annual Meeting and Technical Conference) (Numeric Control Society) 1978 pp.430-437.

Abstract: Outlines a simplified approach employing the usual data collection methods and the adaptation of computer software of the POLYHEDRAL NC system to the replication of natural land forms and sea beds. A further simplification of the procedure is discussed which employs the Gestalt Photomapper. This system employs usual stereographic aerial photographs and using automatic image correlation measures parailexes. The tapped output of the Photomapper has been selectively treated for input to the POLYHEDRAL NC software. Applying the POLYHEDRAL NC programs to NC equipment resulled in faithful replication of the terrain surface photographed.

78.057

Elphingstone, Gerald M.; United States. Defense Mapping Agency Aerospace Center. Aerospace cartography Department, Techniques Office, St. Louis AFS, MO.. **Integrated photogrammetric instrument network,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.102-110.

Abstract: An advanced distributive system of analytical stereoplotters is being developed for the U.S. Defense Mapping Agency Aerospace Center. This system called IPIN is composed of manual and automatic stereoplotters for collection, hardware to handle all data processing, and an edit system to review and edit the digitial files. A description of each component, its developmental status and its expected completion is the subject of this presentation.

Location: 07.

78.058

Everett, M.J.; British Columbia Hydro and Power Authority, Photogrammetric Engineering, Vancouver, B.C.. **Interactive digital photogrammetry at B.C. Hydro.,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.284-292.

Abstract: Concerns an interactive system for compiling and editing photogrammetric data, describing some present applications in terrain modelling, vegetation monitoring, and provision of control for ground surveys, and suggests some potential applications

Location: 07.

78.059

Faig, Wolfgang; Masry, Salem E.; University of New Brunswick. Department of Surveying and Engineering. **Photogrammetric flood risk mapping.** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.667-680.

Abstract: Flood risk boundaries represent the intersection of a hypothetical flood, e.g. with a probability of occuring once every 100 years, with the terrain. It is therefore not usually possible to directly plot these boundaries. Several methods using conventional and analytical photogrammetric plotting techniques were investigated at the University of New Brunswick for the St. John River near Fredericton. In this paper the methods and results are discussed and compared with actual flood values.

Location: 07.

78.060

Faintich, Marshall B.; Sigler, George B.; Fahy, David P.; United States. Defense Mapping Agency Aerospace Center. Advanced Technology Division, St. Louis AFS, MO.. **Advances in digital image display and simulation from digital terrain data bases,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.111-135.

Abstract: Digital terrain data is produced at the Defense Mapping Agency Aerospace Center for a wide variety of products, including input to radar simulators, guidance systems, and automated cartographic systems. This data is collected from source maps using the Lineal Input System and from stero-pairs of photographic imagery using optical correlation processes. In order to facilitate the display of these data bases for analysis, the Aerospace Center has developed the capability for the computer generation of digital image displays of the terrain data in the form of gray level elevation coding, contouring, shaded relief, and simulated perspective vies and stereo-pairs. Technique schematics and examples of the above are presented.

Location: 07.

78.061

Fischler, Martin A.; Quam, L.; Agin, G.J.; Barrow, Harry G.; SRI International. Menlo Park, CA.. **Interactive aids for cartography and photo interpretation. Semiannual technical report 11 May - Oct. 78,** AD-A064-088/8ST..

Abstract: The central scientific goal of the ARPA Image Understanding Project research programme at SRI International is to investigate and develop ways in which diverse sources of knowledge may be brought to bear on the problem of interpreting images. The research is concerned with specific problems that arise in processing aerial photographs for such military applications as cartography, intelligence, weapon guidance, and targeting. A key concept is the use of a generalized digital map to guide the process of image analysis. In the present phase of the programme, the primary focus is on developing a 'road exper.' whose purpose is to monitor and interpret road events in aerial imagery. The objectives, methodology, and current status of the research are described.

78.062

Franklin, William Randolph; Lewis, Harry R.; Harvard University, Cambridge, MA.. **3-D Graphic display of discrete spatial data by prism maps,** (in: Computer graphics (ACM), Vol.12, no.3) (at: Proceedings of the 5th Annual Conference on Computer Graphics and Interactive Technology. SIGGRAPH '78) 1978 pp.70-75.

Abstract: An effecient algorithm for displaying 3-D scenes showing a discrete spatially varying surface is described. A prism is erected on each polygon with height proportional to the attribute. The resulting 3-D scene is plotted with shading and hidden lines removed. Thus the spatial variation of the attributed may be quickly and intuitively grasped by the nontechnical observe. This has applications to areas such as geography if the map is a cartographic map, or to physics if the map diagrams the periodic table. Most of the calculations can be done without knowing the prism heights so extra plots with different attributed for the prisms can be produced quickly. This algorithm has been implemented and tested on maps of up to 12000 edges.

78.063

Freeman, Herbert; Rensselaer Polytechnic Institute. Computer Research Laboratory, Troy, N.Y.. **Application of generalized chain coding scheme to map data processing,** (at: Proceedings of the IEEE Computer Society Conference on Pattern Recognition and Image Processing) (Institute of Electrical and Electronics Engineers, Inc.) 1978 pp.220-226.

Abstract: Concerns data encoding using chain structures. Describes general endocing methods and compares different coding schemes in terms of smoothness, efficiency and processing time.

Location: 16.

78.064

Freeman, Herbert; Rensselaer Polytechnic Institute. Computer Research Laboratory, Troy, N.Y.. **Some new map data encoding schemes,** (at: Proceedings of the Jerusalem Conference on Information Technology, 3rd) (North-Holland Publishing Company) 1978 pp.689-696.

Abstract: Some new schemes for encoding map data are introduced. The schemes can be regarded as generalizations of the well known 8-direction chain coding scheme. Instead of being limited to 8 types of links for approximating a curve, the new schemes posses 16, 24, 32, 48, or even more link types. The new schemes permit increased smoothness of representation, exhibit greater precision, and require less processing time for comparable resolution than present methods.

78.065

Friend, Anthony; Canada. Statistics Canada. Advisor on Environmental Statistics. **Ecological mapping and socio-economic statistics,** (at: Proceedings of the 2nd Meeting of the Canadian Committee on Ecological Land Classification) 1978 pp.115-126.

Abstract: Reviews the experience of Statistics Canada in the development of environmental statistics, briefly summarizing the issue of introducing environmental factors into the National Accounts. Also discusses alternative approaches being developed in Statistics Canada.

Location: 01.

78.066

Gibbons, John E.; Analytic Sciences Corporation, Reading MA. **Trends in digital data base maintenance techniques in the 1980's,** (at: Proceedings of the American Congress on Surveying and Mapping 38th Annual Meeting (Technical Sessions)) (American Congress on Surveying and Mapping) 1978 pp.290-297.

Abstract: Concerns the impact of automation on the DMA mapping programme. Describes data base development and hardware consideration.

Location: 05.

78.067

Gochenour, Donald L. Jr.; Caldwell, Elizabeth N.; Plummer, Ralph W.; West Virigina University, Morgantown, WV. **Data base development and monitoring for energy conversion and conservation in West Virigina public buildings,** (at: Proc. of the 10th Annu. Southeast Symp. on Syst. Theory) 1978 pp.18.18-1.B.29.

Abstract: A discussion is presented of the design of a system for the development and monitoring of a data base involved with determining the potential application of coal to meet the heating and hot water requirement in public buildings in the State of West Virginia, and to report the technically feasible alternatives, their requirements and impacts.

78.068

Gossard, Terry W.; United States. Forestry Service. Engineering Staff Unit, Washington, D.C.. **Use of digital terrain modeling to support resource planning in the Forest Service United States, Department of Agriculture,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission IV. Proceedings of the International Symposium) (Canadian Institute of Surveying) 1978 pp.726-734.

Abstract: Describes three systems in use within the U.S. Forest Service which use Digital Terrain Data DTD) as source material. TOPAS Topographic Analysis System) was developed in-house in 1975 and is used by resource managers to evaluate impacts of alternate land uses on National Forest lands. Digital Terrain Information System DTIS) is a secondary set of programmes within TOPAS that has been enhanced to handle more rigorous analyses related to site specific projects, often involving engineering reconnaissance and design. Method of Scenic Alternative Impacts by Computer (MOSAIC) is a photomontage system that employs computer graphics to depict proposed landscape alternations to overlay on a terrestrial photography of existing area. The basic features of each system, and the primary uses of output products are discussed.

Location: 07.

78.069

Government Studies and Systems, Inc. Philadelphia, PA.. **Methods to determine geographic/population boundaries for specific health services. Addendum to draft State-of-the-art report,** HRP-0901280/8,.

Abstract: Methods for determining the geographic and demographic characteristics of specific health service areas are reviewed to aid in resource allocation and regionalization efforts. It is felt that the project's outputs will be of particular importance to health systems agencies and State health planning and development agencies, especially in the areas of plan development, appropriateness review of existing institutional services, and review of proposed new institutional services. Because administratively determined planning regions are not necessarily self-contained units of health services delivery, it is advantageous for health systems agencies to partition their areas into geographic subregions and to develop health service need/demand forecasts and research inventories according to subregions. Most geographic analyses have centered around hospitals, with areas defined by studies of patients' origins. Some literature relates to optimal location and allocation of resources, especially in the public sector. Problems are typically stated in operations research/optimization terms. Relevant studies are collected and discussed in an extensive annotated bibliography.

78.070

Grant, K.; Finlayson, A.A.; CSIRO, Mount Wavereley, Victoria, Australia. **Assessment and evaluation of geotechnical resources in urban or regional environments,** (in: Engineering geology, Vol.12, no.3) 1978, Sept. pp.219-293.

Abstract: A system for numerical nomenclature of the terrain classes is proposed so that information collected will be compatible with processing in a computer medium. Terrain classification is achieved by a process of aerial photography interpretation and field work. Using this system, assessment and evaluation of geotechnical resources can be conducted in three stages for: 1) feasibility studies, 2) planning and 3) construction. Using an appropriate data-processing medium, sets of information can be stored for retrieval at any time and items can be retrieved from sets of information as required. The most satisfactory method for information processing is through a computer, but the system can be adapted for office files or field notebooks.

Location: 20,27,38,36.

78.071

Grayman, Walter M.; Koch, Paul D.; W.E. Gates and Associates Inc.. **ADAPT sewer design geographic information system,** (at: 1st Conference on Computing in Civil Engineering) (American Society of Civil Engineers) 1978 pp.794-808.

Abstract: The ADAPT geographic information system is a computerized system and data base for storing terrain and other spatially arrayed information required for engineering planning and design models. Sewer design models which directly access and use the ADAPT data base have been developed, thus enhancing the ability to examine a wide range of alternatives. A broad scale planning model provides cost and design information for large scale regional networks specified by an engineer. A detailed sewer design model uses a dynamic programming algorithm to determine the least cost detailed sewer design for alternative networks specified by an engineer. The models provide a variety of graphic and tabular output useful in analysis of the designs.

78.072

Gronmeyer, Larry K.; Ruffin, Byron W.; Naval Ocean Research and Development Activity, Hydrographic Development Branch. **Application of optical character recognition techniques for the digitization of alpha-numerics at the Defense Mapping Agency (DMA)-Part 1,** (at: Proceedings of the American Congress on Surveying and Mapping 38th Annual Meeting (Technical Sessions)) (American Congress on Surveying and Mapping) pp.140-170.

Abstract: Explains two pattern recognition systems and compares their effectiveness in handprinted character recognition.

Location: 05.

78.073

Gross, Arthur G.; Bell Telephone Lab., Murray Hill, NJ.. **Technical specifications for the file format for data exchange between graphic data bases,** (at: Proceedings of the 15th Design Automation Conference) (IEEE) 1978 pp.54-59.

Abstract: A data base interchange file format has been designed for the Computer Assisted Mapping and Records Activities System, CAMRAS, sponsored by the American Public Works Association. The Association is evaluating the format for promulgation as a standard. A description of the interchange file format is given.

78.074

Haddon, Jack A.; Ontario. Ministry of Natural Resources. Mapping Services. **Ontario Basic Mapping System,** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.69-74.

Abstract: Discusses the development of the Ontario Basic Mapping System with the various recommendations made by the Task Force on Geographical Referencing for the purpose of standarization.

Location: 01.

78.075

Hage, G.L.; California University. Livermore. **KRS: A fast, special-purpose data base system,** 1978, Sept. 7, UCID-17847 Rev. 1),.

Abstract: The K-Division Retrieval System (KRS) is a group of programmes and files maintained by the Lawrence Livermore Laboratory to store and recall data about the geology and events at the Nevada Test Site. KRS consists of two large data files that are regularly updated with new information. This report describes these data files and the interaction necesary to use the specialized programmes, obtain access to the information, and arrange the data reports. These programmes are run on CDC-7600 computers and are available in public files.

78.076

Hamilton, Angus C.; University of New Brunswick. Department of Surveying and Engineering. **Towards a renewable-resource information system for use at the regional and local level,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.293-302.

Abstract: A renewable resource information system for use at the regional and local level in the Maritime Provinces is needed for the effective utilization of the funds being expended to revitalize the argriculture industry and to ensure sustained production in the forest industry. Suggests that for renewable resource information systems six data bases are needed, namely: topographic, soil, climatology, boundaries, forestry and agriculture. Also suggests that each data base should be owned and managed by the group that have the most expertise in collecting and using the data in the data base. The most important concept in the system is the concept of the flow of data and the most important element in the system is the decision maker.

Location: 07.

78.077

Hanson, Mark G.; Lynch, Dennis; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Automated geo-coding and display in map form of survey data,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.178-188.

Abstract: Describes the data processing software developed at the Central Transportation Planning Staff (C.T.P.S.) for the analysis of origin-destination surveys, and other spatial data. The system consists of two components, one for assigning geographic zone information traffic zone, school district, police precinct, census tract to data based on addresses "geocoding" and the second for using the geographic base file (GBF)/DIME file to provide source map information for producing computer-generated maps.

Location: 18.

78.078

Haws, Richard C.; Dunn, J.W., III; Paddock, Richard E.; Research Triangle Institute, Research Triangle Park, N.C.. **Computer Assisted Areas Source Emissions (CAASE) gridding procedure (revised). UNIVAC 1110/EXEC 8 version user's manual. Final report,** PB-288 904/6ST,.

Abstract: Atmospheric dispersion modelling programmes such as the Climatological Dispersion Model (CDM), Air Quality Display Model (AQDM), and Implementation Planning Program (IPP) are among the most basic tools used for evaluation of air quality and State Implementation Plans (SIP's). SInce emissions data comprise the most important input information for these models, any factor affecting the availablity and completeness of the emissions data has a significant impact on the results of the modelling programs. Procedures for formatting emissions from point sources are well defined; however, area source emission data present problems. Usually the smallest geographic unit for which accurate primary data are available is the county. These data must be disaggregrated and appropriately allocated to smaller areas to provide an adequately detailed input. The Computer Assisted Area Source Emissions gridding programs with associated subroutines containing automated gridding procedures provide an objective method for allocating county-level data to grid squares selected on the basis of demeographic features and sized to give appropriate detail for input to air quality modeling programmes.

78.079

Haydu, George; Canada. Statistics Canada. Standards Division. **Standard Geographical Classification System,** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.148-151.

Abstract: Discusses geographical referencing, classification and coding. Describes the Standard Geographic Code (SGC) and its application within Statistics Canada.

Location: 01.

78.080

Heil, Richard J.; Brych, Susan M.; Elder, Evie, ed.; W.E. Gates and Associates Inc.. **Digital terrain model: A tool for quantifying terrain characteristics,** (at: Proceedings of the American Congress on Surveying and Mapping, 1978 Fall Technical Meeting (Fall Convention)) (American Congress on Surveying and Mapping) 1978 pp.156-171.

Abstract: Concerns digital terrain modelling, especially the irregular triangular cell digital terrain model. Includes illustrations of DTMs.

Location: 05.

78.081

Honea, B.; Johnson, Paul; Oak Ridge National Laboratory, TN.. **Computer mapping software and geographic data base development: Oak Ridge National Laboratory user experience, Conference on Computer Mapping Software and Data Bases, Cambridge, MA., July 26, 1978,** CONF-780727-1,.

Abstract: As users of computer display tools, our opinion is that the researcher's needs should guide and direct the computer scientist's development of mapping software and data bases. Computer graphic techniques developed for the sake of the computer graphics community tend to be esoteric and rarely suitable for user problems. Two types of users exist for computer graphic tools: the research who is generally satisfied with abstract but accurate displays for analysis purposes and the decision maker who requires synoptic and easily comprehended displays relevant to the issues he or she must address. Computer mapping software and data bases should be developed for the user in a generalized and standardized format for ease in transferring and to facilitate the linking or merging with larger analysis systems. Maximum utility of computer mapping tools is accomplished when linked to geographic information and analysis systems. Computer graphic techniques have varying degrees of utility depending upon whether they are used for data validation, analysis procedures or presenting research results.

Location: 17.

78.082

Howman, C.; Woodford, P.A.; **Laserscan fastrak automatic digitizing system,** (at: 9th International Conference on Cartography) 1978.

Abstract: ?

78.083

Hsu, Shin-yi; State University of New York at Binghamton. **Automation in cartography: A case of technology and methodology diffusion from the remote sensing science,** (at: Proceedings of the American Congress on Surveying and Mapping 38th Annual Meeting (Technical Sessions)) (American Congress on Surveying and Mapping) 1978 pp.4-9.

Abstract: Discusses Mapping Software for producing maps directly from digitized imagery data, remote sensing methodologies for mapping and the impact of these technologies on cartography.

Location: 05.

78.084

Hsu, Shin-Yi; State University of New York, Center Sci. Study Nat. Resources, Binghamton, NY. **Texture-tone analysis for automated land-use mapping,** (in: Photogrammetric engineering and remote sensing, Vol.44, no.11) 1978, Nov. pp.1393-1404.

Abstract: Summary of the results of a computerized classification and mapping project utilizing a new texture measure sponsored by RADC, U.S. Air Force. For classification, only the center point of the pixel area is involved. The classifier employs linear discriminant functions based on the Mahalanobis D2 statistics derived from the generalized inverse of separate dispersion matrix for each group. In seven test areas in New York State, the preliminary results yield a correct classification rate of above 95 percent for the training sets, and 85 to 90 percent for the data property set, with five to ten land-use types.

Location: 05,09,10,20,21,23,24,27,28,32,36.

78.085

Huma, I.; Radulescu, D.; Coll. of Civ. Eng., Bucharest, Romania. **Automatic production of thematic maps of slope stability,** (in: International Association of Engineering Geologists Bulletin, no.17) (at: Landslides and Other Mass Movements Symposium) 1978, June pp.95-99.

Abstract: Establishes the major factors that govern land degradiation and criteria for estimating the degree of land stability or its degradation possibilities. The data obtained by interpreting aerial photographs are compared with field and laboratory data and are introduced into the computer memory where their correlation is performed depending on established criteria. By means of graph-plotter a thematic geotechnical zoning map is obtained with different degrees of land stability.

Location: 20.

78.086

Hunka, George W.; RCA, Camden, N.J.. **Aided-track cursor for improved digitizing accuracy,** (in: Photogrammetric engineering and remote sensing, Vol.44, no.8) 1978, August pp.1061-1066.

Abstract: The cursor incorporates a rotable linear photodiode array onto which the feature being digitized is imaged. Processing of the array output produces a count indication of the deviation of the feature from the table encoder fiducial marking. A dedicated minicomputer is used to combine the digitizing encoder outputs with the array correctional counts to derive accurate coordinate values, even in the presence of tracking errors up to 1/16th inch. Rotational commands are generated by the computer to orient the array perpendicular to the traced feature for maintaining accuracy in cases where curvatures exist in the traced function.

Location: 05,09,10,20,21,23,24,27,28,32,36.

78.087

Huxhold, William E.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; City of Milwaukee. Central Electronic Data Services Department. **Milwaukee computer graphics system: The Graphics Inquiry capability,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Associated) (Urban and Regional Systems Association) 1978 pp.201-211.

Abstract: Presents a description of the capability to interactively display data from existing data files onto maps stored in a computer graphics system.

Location: 18.

78.088

Hyde, Richard F.; Killpack, Charles L.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Butler University. Regional Environmental Assessment Program. **Applying LANDSAT data in a geographic information system to delineate prime farmlands and elevate their loss to urban expansion,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association)

(Urban and Regional Systems Association) 1978 pp.430-441.
Abstract: Considers the use of remote sensing data with a GIS and Spatial Predictive Modeling for land use information, and analysis.
Location: 18.

78.089
Irish, Sumner B.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Charlottesville, VA.. **Cadastral systems for geoprocessing,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual COnference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.122-131.
Abstract: Considers the problems and advantages of creating a cadastral system, in terms of data base development, economics, data accuracy and data referencing.
Location: 01.

78.090
Irvine, J.A.; Williams, G. Daniel; University of Alberta. Institute of Sedimentary and Petroleum Geology, Calgary, ALTA.. **Computer-assisted national coal inventory,** (in: Canadian Mining and Metallurgical Bulletin, Vol.71, no.794) 1978, June pp.63-70.
Abstract: The emphasis in computer utilization was placed on geological credibility of the results and ease of operation by relatively untrained geological personnel, resulting in extensive use of interactive methods. The single most important benefit derived from using computer-assisted procedures is the ability to produce new maps and quantity estimates rapidly and inexpensively as a result of availability of new data on/and changes in external criteria which impose economic or mineability constraints.
Location: 02,10,24.

78.091
Ives, Laura; Ontario Hydro. Land Use and Environmental Planning Department. **Route and Site Selection System,** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.18-41.
Abstract: Describes the Computer Assisted Route and Site Selection System in terms of input, storage, output and analysis techniques with particular emphasis on those aspects of the system which rely on the use of digital data and geographic referencing.
Location: 01.

78.092
Johnson, Myrle M.; Elder, Evie, ed.; Los Alamos Scientific Laboratory, Los Alamos NM. **Computer cartography in energy applications,** (at: Proceedings of the American Congress on Surveying and Mapping, 1978 Fall Technical Meeting (Fall Convention)) (American Congress on Surveying and Mapping) 1978 pp.209-217.
Abstract: Describes automated mapping applications including graphics for solar energy-related data, regional resource development, and electric power production impacts. Presents data display examples.
Location: 05.

78.093
Kansy, Klaus; Gesellschaft Fur Math. Und Datenverarbeitung, St Augustin, Germany. **Capture and encoding of area-oriented geographic maps,** (at: Proceedings of the Jerusalem Conference on Information Technology, 3rd) (North-Holland Publishing Company) 1978 pp.705-709.
Abstract: A scheme is described to acquire and encode area-oriented geographic maps. The maps are digitized manually as a set of segments and a set of reference points with area codes. Fast computer programmes generate nodes, create closed polygons to describe areas, associate the area codes, and find areas contained in other areas. If appropriate drawings are available the manual digitization can be replaced by automatic digitization raster scanner). After scan-to-line conversion the data are encoded like the manual digitized material thus permitting use of the same programme modules. Some 100 maps have been

acquired to obtain data bases for national and urban land use information systems.

78.094

Kerr, John H.; Ontario. Ministry of Natural Resources. Task Force on Geographical Referencing. **Systematic series of grid cells**, (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.75-90.

Abstract: Presents the recommendations of the task Force on Grid Cells and Geocodes. Brief reference is made to the advantages and disadvantages of using polygon overlays or grid cells in designing a computerized system for geographical data. Concentrates on the use of grid cells in this aspect. Also reviews some of the basic characteristics of the UTM system.

Location: 01.

78.095

Kinzy, Stephen W.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; HDR Systems Inc., Omaha, NB.. **Geoprocessing system planning**, (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.102-107.

Abstract: Provides an analysis of the key issues involved in the system planning process, delineates the basic prerequisites for conducting the plan, and defines the needed results.

Location: 18.

78.096

Klaver, Jacob; Kern and Co. Ltd, 5001 Aarau, Switzerland. **Computer-supported stereocompilation,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.152-165.

Abstract: Describes two systems the basic Kern AT Semi-Automatic Stereoplotter System and the higher level Kern DC 2-B Digitizing Graphics Calculating System. After a short systems description it describes for each system: how the data is digitized, how the digitized data is transferred and where to, how the data is plotted on the automatic drawing table, the capability of the systems, which manual functions are replaced by automatic functions, why this approach was chosen, the differences between this new approach and the conventional mode of stereocompilation with their consequences concerning the operator, the working mode, the precision and the time saving.

Location: 07.

78.097

Kleuss, Pluma W.; Moyer, Melinda G.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Center for Governmental Research Inc., Rochester, N.Y.. **COMPIS, GBF/DIME and human resources: A local application,** (at: Data resources and requirements: Federal and local perspectives.URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.268-278.

Abstract: Describes COMPIS, its implementation and its applications for human services planning in one demonstration site, Monroe County, New York.

Location: 18.

78.098

Khatky, V.; **Raflexive prediction and digital terrain modelling,** (in: Photogrammetric engineering and remote sensing, Vol.44, no.5) 1978.

Location: 05,09,10,20,21,23,24,27,28,32,36.

78.099

Krathy, V.; Canada. National Research Council. Photogrammetric Research, Ottawa, ONT.. **Spectral analysis of some interpolation methods,** 0-919088-05-8, (at: New technology for mapping. Technical papers from commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.166-185.

Abstract: Reviews basic concepts of spectral analysis as needed for computer data processing in digital terrain modelling and automated mapping. Interpolation, smoothing and parametric transformation based on uniform sampling are interpreted as different types of convolution. Spectral properties of some typical methods are then discussed with main emphasis on the linear least squares interpolation. This method is shown to be a close approximation to an interpolation with low-pass filtering effect. A functional form of an operator is derived, which enables a direct least squares interpolation avoiding the usual inversion of the covariance matrix. Finally, advantages of spectral analysis are demonstrated by examining the accuracy and stability of the procedure.

Location: 07.

78.100

Kraus, K.; Otepka, G.; Loitsch, J.; Haitzmann, H.; Technical University of Vienna. Institute of Photogrammetry, Gubhausstrabe 27-29, A 1040 Vienna, Austria. **Digitally controlled production of orthophotos and stereo-orthophotos,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.562-585.

Abstract: The Wild Company presented the digitally controlled rectifier Avioplan OR 1 and the corresponding software package SORA. The practice of using the software package SORA is analysed. A multiplicity of data acquisition procedures, computational requirements, and time consumption of the rectification process are discussed. A specific section is dedicated to the accuracy attainable by this system. Orthophotos and stereo-orthophotos of a test field have been produced. An empirical accuracy study of orthophotos and stereo-orthophotos has been performed on the basis of known coordinates of signalized points. The new version of the program for stereo-orthophotos SORA-OPS is described in detail. It will make possible the manufacture of all known types of stereo-orthophotos.

Location: 07.

78.101

Kropatsh, W.; Leberl, Franz W.; Technical University Graz. Institute for National Surveying and Photogrammetry, GRAZ, Austria. **Concept for the automatic registration of satellite images with a digital map data base,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.411-424.

Abstract: Describes the concept for a computer program system to automatically register digital satellite images to a digital cartographic data bank. A specific organization of this data bank is required. Programming for this system is under way.

Location: 07.

78.102

Larsen, Barbara J.; **Land records: The cost to the citizen to maintain the present land information base, a case study of Wisconsin,** (State of Wisconsin: Department of Administration. Office of Program & Management Analysis) 1978.

Abstract: Documents the costs to the citizen of Wisconsin to collect and maintain land records for the state during fiscal year 1975-76 for all federal, state, regional, and local governmental units which are responsible for producing, collecting, and maintaining records about the land. Definitions are provided. In addition duplication between and within governmental agencies is identified. Past and present Land Records Systems in the state are reviewed. Problems with present systems are discussed, conclusions are reached, criteria for improvement are recommended, alternatives are presented, recommendations are offered and implementation strategies are provided. The research procedure is described and the associated expenditure data is included.

Location: 01.

78.103

Lima, Robert J.; Shelman, C.B.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Argonne National Laboratory, Argonne IL.. **Applications of the ALICE System in city and regional planning,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.189-200.

> **Abstract:** Describes the ALICE System, its capabilities in the area of city and regional planning and the research efforts at ANL/AMD in the development and implementation of an Environmental Mapped Data Digitization, Encoding, Analysis and Display System.

Location: 18.

78.104

Linders, James G.; University of Guelph. Department of Computing Science. **Geo-referenced data systems,** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.180-214.

> **Abstract:** Identifies the characteristics of geo-referenced data bases and their implications on the many disciplines currently making use of geo-referenced data. Various aspects of geo-referencing are reviewed. The application of specific technologies to geo-referencing, in particular, data base, computer graphics, computer communications and systems is discussed. As well, a number of problem areas are identified. A system perspective for the development of a total integrated geo-referenced capability for the Province of Ontario is also developed.

Location: 01.

78.105

Logan, Ron; Ontario. Ministry of Consumer and Commercial Relations. Property Rights Division. **Province of Ontario Land Registration Information System (POLARIS),** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.128-136.

> **Abstract:** Describes the improvements that can be made to the present Land Registration System with POLARIS including the use of computers for data collection, storage of data on microfilm and the assignment of unique identifiers to each land parcel in the Province.

Location: 01.

78.106

Logan, T.L.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Jet Propulsion Laboratory, Pasadena, CA.. **Monitoring airborne health impacts through spatial crosstabulation techniques: The IBIS approach,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.339-350.

> **Abstract:** Discusses the IBIS capability of crosstabulating dissimilarly referenced data sources. Describes a case study which merged population census data and air quality data to produce a map of airborne health impacts.

Location: 18.

78.107

Lund, H. Gyde; LaBau, Vernon J.; Ffolliott, Peter F.; Robinson, David W.; Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.. **Integrated inventories of renewable natural resources: Proceedings of the Workshop held in Tucson, AZ. on Jan 8-12, 1978,** PB-281 036/4ST, FSGTR/RM-55, (series: Forest Service general technical reports),.

> **Abstract:** The purpose of the workshop was to promote efficient, objective, and timely inventory systems through integrated inventories: 82 papers were presented in 9 panels covering: information requirements, current techniques, need for integrating inventories, land classification systems, remote sensing, principles for integrating inventories, data processing, information systems, and state of the art.

Location: 17.

78.108

MacDonald, Connie L.; Taylor, D.R.F., ed.; Canada. Department of Fisheries and Environment. Lands Directorate. Carleton University, Ottawa, ONT.. **New developments in the Canada Geographic Information System, Recent trends in geographic information processing in the National Capital Region,** 0-7709-0040-2, (at: Symposium on Geographic Information Processing) 1978, May pp.28-31.

Abstract: Concerns recent 1978 changes in CGIS and describes developments in data classification, digitization, and data display.

Location: 19.

78.109

Mahan, Sheila; Spivac, Gary; Swank, Robert; **Plotting land use in Oregon,** (in: Datamation, Vol.24, no.11) 1978, Nov. pp.155-162.

Abstract: A Geographic Data System in Oregon's Land County provides information for agencies that make decisions related to land and its use, and allows geographic analys is of almost any information. Access to the information is in either batch or interactive mode. Reports and large plots can be produced in batch while queries can be made through terminals. Input to the system comes from the operational files of various local government agencies. The Eugene Planning Department is producing twice as many planning studies as it did prior to use of the data system, without a corresponding increase in staff. One benefit is that, with simple, clear computer graphics, the work of planners is more comprehensive and more visible to the public.

Location: 02,03,05,07,06,08,09,19,20,24,25,26,27,28,36.

78.110

Mark, David M.; **Concepts of data structure for digital terrain models,** (at: Proceedings of the Digital Terrain Models (DTM) Symposium, American Society of Photogrammetry St. Louis, Mo.) 1978.

78.111

Masry, Salem E.; McLaren, R.A.; University of New Brunswick. Department of Surveying and Engineering. **Digital map revision,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.253-266.

Abstract: Describes a simple method for detecting changes in a digital mapping data base. New aerial photographs are compared with the existing data and the changes in planimetric detail or relief are detected. The method is based on the transformation of the data to the photographs rather than the usual transformation of the photographs to the map. A technique for the digitization of the updates, in which a modified table digitizer can be used, is discussed. Both the detection and digitization operations are not limited to conventional photography, and use hardware configurations which can usually be found nowadays in organizations carrying out digital mapping. In addition to its application to map revision, the detection procedure can be used to check planimetric and height errors in digital data.

Location: 07.

78.112

Mayhood, F.; Nakamura, C.; Piepgrass, E.B.; **Computer-assisted mapping system specifications for procurement of computer mapping systems,** 1978, June.

78.113

McClung, Ian; Ontario. Ministry of Revenue. Region of York. **Geocodes,** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.91-104.

Abstract: Presents the recommendations of the Task Force on Grid Cells and Geocodes stressing one standard geographical referencing system with respect to generalized access by users, aggregation of information, unique classification, use of UTM coordinates as point identification identifiers, etc.

Location: 01.

78.114

Miller, Robert J.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; City of Winston-Salem, Management Services Department, Winston-Salem, NC.. **Structuring a GBF to meet police and fire users needs,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.279-285.

Abstract: Presents a review of the structure of the geographic data base GBF used by the City of Winston-Salem, North Carolina in support of its Police and Fire Information Systems. The GBF is used to support location verification for report data, entry and dispatching and to support the analysis of events such as offenses, accidents and calls for service. The procedure by which the GBF was developed is reviewed and examples of the way it is used are presented. The advantage of the small area zone approach to the GBF over the DIME File approach is discussed.

Location: 18.

78.115

Mineral Deposits Working Committee. National Advisory Committee on Research in the Geological Sciences. Canada Centre for Geoscience Data. **Computer-based files on mineral deposits: Guidelines and recommended standards for data content. Final report,** 78-26, 0-660-10124-6, (series: Geological Survey paper), (Geological Survey of Canada) 1978.

Abstract: Makes recommendations on content, organization and some aspects of editorial control that will promote both the effectiveness of individual mineral deposit files and a degree of compatibility between them. General recommendations cover the definition of the purpose, definition of file entity, need for basic documentation, use of tables of values, preservation of conceptual linkage and the use of metric SI) units.

Location: 01.

78.116

Morehouse, Scott; **ODYSSEY File System,** (in: Harvard papers on geographic information systems, Vol.7,) 1978.

78.117

Moyer, D. David, ed.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; United States. Department of Agriculture.. **Computerized annotated bibliography on land information systems,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.219-226.

Abstract: Describes a system for the compilation, organization, and use of reference materials concerning land information systems. The system includes use of optical scanners, remote terminals for interactive editing, computerized indexing, and the production of phototypeset camera copy using computer driven techniques.

Location: 01.

78.118

Moyer, D. David, ed.; United States. Department of Agriculture. Natural Resources Economics Division. North American Institute for the Modernization of Land Data Systems MOLDS. **Land information systems: An annotated bibliography**, (MOLDS) 1978.

Abstract: Lists references on GIS by author, with subject, title vocabulary and abstract vocabulary indices. Includes abstracts for most documents.

Location: 18.

78.119

Mroczynski, R.P.; Purdue University. **Forest Resource Information System. Quarterly report 1 Jul - 30 Sep 78**, E79-10175, LARS-CR-093078,.

Abstract: The author has identified the following significant results. A benchmark classification evaluation framework was implemented. The FRIS preprocessing activities were refined. Potential geo-based referencing systems were identified as components of FRIS.

78.120

Murai, Shunji; University of Tokyo. Institute of Industrial Science, Tokyo, Japan. **Digital rectification of oblique photography in coastal mapping**, 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.702-707.

Abstract: Deals with digital rectification of oblique photographs with more than the allowed depression angle which can be processed by an optical rectifier. The first procedure of digital rectification is to determine the outer orientation parameters by using control points. The second procedure is to produce the rectified ortho-image by using a digitized oblique photograph. Digital rectification would be very useful for coastal mapping, because selection of control points is much easier in an oblique photograph, and the sea can be assumed a plane so that the geometry of the oblique photograph is free from the stereoscopic images.

Location: 07.

78.121

Murai, Shunji; Tateishi, Ryutaro; University of Tokyo. Institute of Industrial Science, Tokyo, Japan. **Integration of LANDSAT CCT data and digital terrain data in cartographic application**, 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.445-454.

Abstract: Deals with integration of LANDSAT CCT data and digital terrain data in cartographic application. Geographic correction scene of LANDSAT MSS data with high accuracy which enables the overlay of LANDSAT data upon the national digital terrain model, automated relief shading using both LANDSAT data and digital terrain data, pseudo stereoscopic LANDSAT images and their three dimensional representation are major themes in the study.

Location: 07.

78.122

Murai, Shunji; Tateishi, Ryutaro; Okuda, Tsutomui; Matsuoka, Ryuji; **Integration of LANDSAT data and National Land Data System**, (at: Twelfth International Symposium on Remote Sensing of Environment) 1978.

78.123

National Aeronautics and Space Administration. **Large Area Crop Inventory Experiment (LACIE). Level 3 baseline: Classification and Mensuration Subsystem (CAMS) requirements, Volume 2, Revision E (LACIE-C00200)**, E79-10070, JSC-11330, NASA-TM-79933,.

78.124

National Technical Information Service. **Directory of computer software applications - natural resources and earth science. 1970 - Dec. 1978**, PB-288 486/4ST, NTIS/SA-78/18,.

Abstract: Natural Resources and Earth Science reports that list computer programmes and/or their documentation are cited. These software applications pertain to topics: such as mining, hydrology, soil and rock properties, earthquake modeling, forestry, remote sensing, cartography, geophysics, coastal zone management, and geothermal systems. The directory contains complete bibliographic data for each report as well as a subject and a corporate author index.

78.125

Niedzwiadek, Harry A.; Greve, Clifford W.; Pywell, H. Ross; Autometric Inc., Arlington, VA.. **Wetlands analytical mapping system,** (at: American Society of Photogrammetry 44th Annual Conference) 1978 pp.320-328.

Abstract: The wetlands analytical mapping system is a computer-based system developed to produce a digital record with the classification and geographical location of all U.S. wetlands. One programme is used to produce the orientation parameters and other information needed as input to the digitizing process. The digitizing programme produces records of wetlands from geounits defined geographical areas). Each geounit must be digitized before it is included in the wetlands data base. These programmes are interactive. Other programmes to build and maintain the wetlands data base and to provide map plots to users are available. The digitizing process is described.

78.126

Orsinger, Regis J.; Army Engineer Topographic Laboratories, Fort Belvoir, VA.. **Data base sizing methodology applied to the Army Terrain Information System (ARTINS),** AD-A058 120/7ST, ETL-0150,.

Abstract: The objective of this report is to describe a methodology for estimating the storage requirements of a terrain data base as a function of geographic location and areal extent. This is done within the context of the development of a tactical data system called the Army Terrain Information System (ARTINS). The conclusions are: 1) The feasibility of storing a large terrain data base on militarized, or commercial, random access devices is clearly demonstrated, 2) A predictive methodology can be employed quickly and cheaply to estimate terrain data base storage requirements, 3) The total storage requirement is relatively insensitive to change in horizontal spacing in the range beyond 125 meters, and 4) the storage requirement attributed to feature data can be dramatically reduced by modifying the required level of detail and/or the criteria for including and segmenting features.

78.127

Palmerlee, Thomas M.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Kansas City Department of Information and Research, Kansas City, KS.. **Sanitary sewer geographic base file,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.298-309.

Abstract: Development of a sanitary sewer geographic base file is in progress in Kansas City, Kansas. Although the primary goal is improved record keeping and development of computer mapping capabilities, the file will support a variety of operational activities. File building programmes are completed and data collection is in progress.

Location: 18.

78.128

Perciasepe, Bob; Johns, James; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Baltimore City. Department of Planning. **Baltimore City geo-coded land use data system for water quality planning**, (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.310-315.

Abstract: Describes a Baltimore City tax file, its system of geocoding and its structure, and presents planning applications.

Location: 18.

78.129

Potts, T.F.; Taylor, D.R.F., ed.; Computing Devices Company. Carleton University, Ottawa, ONT.. **Use of the ARIES System for forest management, Recent trends in geographic information processing in the National Capital Region**, 0-7709-0040-2, (at: Symposium on Geographic Information Processing) 1978, May pp.62-69.

Abstract: Describes ARIES, a system for processing data for forest management applications, and discusses its current and potential use.

Location: 19.

78.130

Renshaw, Richard W.; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; County of Santa Clara. Center for Urban Analysis, San Jose, Ca.. Carleton University, Ottawa, ONT.. **Geobased systems - Facing reality: A local perspective of geographic data needs and resources**, (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.2-13.

Abstract: Examines the need for geographic based information, explores issues of concern to local agencies and notes some emerging conflicts between local needs and federal requirements. Points out some of successes, failures and limitations which could prevent local geo files and processing technology from reaching full maturity as cost effective tools for planning and management of local government services. Specific suggestions outline steps to avoid having geoprocessing technology fade into obscurity.

Location: 18.

78.131

Riley, N.W.; Sturgeon, K.B.; Cape Town Engineer's Department. Technical Management Services, Cape Town, South Africa. **Methods of manipulating geo-coded data through social indicators for use in simulation modelling and decision taking**, 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.304-322.

Abstract: Discusses the need for urban information systems to handle the large quantitites of data required for urban planning especially given the constantly changing urban environment. Briefly considers the benefits of geocoded data as opposed to grid systems for ease of access to the data and for greater data manipulation.

Location: 07.

78.132

Riordan, William T.; Defense Mapping Agency, Washington, D.C.. **Digital data bases - the wave of the future**, (at: Proceedings of the American Congress on Surveying and Mapping 38th Annual Meeting (Technical Sessions)) (American Congress on Surveying and Mapping) 1978 pp.279-283.

Abstract: Considers the growth in the use of digital data bases in the mapping programmes of various U.S. government agencies. Recommends interagency cooperation and makes some predictions about the future of digital operations.

Location: 05.

78.133

Roberts, Willis F.; Council of Maritime Premiers. Land Registration and Information Service. **Cost-benefit aspects in establishing the different phases of a land informtion system,**.

Abstract: Evaluates the economics of the LRIS in the Maritimes over its first five years of development.

Location: 01,39.

78.134

Robinette, Alan D.; Nordstrand, Earl; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Minnesota State Planning Agency, St. Paul, MN.. **Resource information system developed by user applications,** (at: Data resources and requirements: Federal and local perspectives /URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.255-267.

Abstract: The Minnesota Land Management Information development involved the assembling of many available independent components into a compatible data structure with common analysis tools. The system evolved through applications in a context of real needs and realistic technical support. This paper discussed the contributing factors, system design, system application and application methods.

Location: 18.

78.135

Salmen, Larry; Gropper, James; Hamill, John; Reed, Carl; Federation of Rocky Mountain States, Inc. Fort Collins, Co.. **Map indexing system user's manual,** PB-286 890/9ST,.

Abstract: The manual describes the map indexing system (MIS) component of the U.S. Fish and Wildlife Service's Geographic Information System. It explains how spatially related data which is used and needed by the Fish and Wildlife Service can be catalogued and filed in a comprehensible, partially manual, partially automated, library system. The manual contains a general overview of MIS components, directions on using the MIS to evaluate data bases, and suggestions on where to search if data are not in the system. An appendix provides examples of system commands.

Location: 17.

78.136

Schlesinger, Jerry; Chapman, Carol A.,ed.; Infanger, Craig L., ed.; Ribbins, Lyan W., ed.; Debertin, David L., ed.; **South Dakota automated geographic information system,** (at: Proceedings of the Conference: Taking Computers to the Community: Prospects and Perspectives) (University of Kentucky. College of Agriculture) 1978.

78.137

Schmidt, Allan H.; **Shareable data bases key for effective mapmaking,** (in: Computerworld, Vol.12, no.19) 1978, May, 12 pp.36.

Abstract: A national cartographic data base is needed which can readily produce computer mapping among organizations having much the same needs. Many data bases designed to support federal programmes could be applied by other users. For example, the Dual Independent Map Encoding files which use topological data to describe features, such as city blocks, could also be used to map land use or health statistics. A topological data base would have wide applicability. The capability to merge 2 cartographic data files into one data base has also been developed. Further work should also be done on merging a gridded data base with the topological data structure.

Location: 27.

78.138

Shapiro, Linda G.; Haralick, Robert M.; Kansas State University. Department of Computer Science. **General spatial data structure,** (at: Proceedings of the IEEE Computer Society Conference on Pattern Recognition and Image Processing) (Institute of Electrical and Electronics Engineers, Inc.) 1978 pp.238-249.

Abstract: Concerns the problem of representing spatial data in computers. Defines a spatial data structure, discusses data manipulation required for spatial data and details data matching.

Location: 16.

78.139

Shelton, Thom; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; North Central Texas Council of Governments, Arlington, TX.. **Development and application of 1975 land use data,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.316-327.

Abstract: Summarizes the written documentation which defines the relationship of the land use and soil data files to a regional system. Initial attention is given to data coverage, the classification system, and the geocode units being utilized. The actual file creation methodologies are described along with an analysis of the data reliability and manner in which the data can be accessed. Examines the use of the data in the Water Quality Management (208) Planning Program at NCTCOG.

Location: 18.

78.140

Sibert, John L.; Phillips, R.; Lohrenz, J.; Los Alamos Scientific Laboratory, Los Alamos NM. **Data-base management system for spatial display of federal offshore oil and gas lease data,** LA-UR-77-2779, CONF-780311-1, (at: Geological Survey Computer Symposium).

Abstract: A data-base management system has been developed meeting requirements for color-coded map displays and used for Federal offshore oil and gas lease data of the L PR-5 and LPR-10 data bases. Unusual features of the system exploited for this application are: 1) The data base is accessed using a powerful and easily learned query language that resemebles simple English. 2) Data base searches may be keyed on either data items or functions of data items. For example, all leases that are produced at flush level can be located with one simple query. 3) Provision is made for graphical output, including production of high-quality color maps. 4) The data base has a network structure as proposed in the CODASYL Data Base Task Group report 1). However, the user need not be aware of the structure to query the data base. Examples are provided of several different types of queries and the resulting output.

78.141

Sibert, John L.; Los Alamos Scientific Laboratory, Los Alamos NM. **Mapping offshore oil leases,** (at: Proc. American Congress on Surveying and Mapping, 38th Annual Meeting) (American Congress on Surveying and Mapping) 1978 pp.128-134.

Abstract: A data-base query system has been developed at the Los Alamos Scientific Laboratory. The data base has a network structure based on the CODASYL standard. Important aspects of the data-base retrieval system are its use of query language that allows complex retrievals to be specified in simple English phrases and on-line production of thematic maps. The legal description of each lease, based on the public land survey, is stored in the data base to provide the coordinates necessary for map production. Maps can be produced interactively during a query session on a Textronix 4014 graphics terminal. Hardcopy color maps are obtained by using a color-equipped FR-80 computer output microfilm recorder. Several examples of queries and the maps they produce are presented.

78.142

Simonett, D.S.; Smith, T.R.; Tobler, W.R.; Marks, D.G.; Frew, J.E.; University of California. Remote Sensing Unit, Santa Barbara. **Geobase information system impacts on space image formats. Conference-Workshop held at Santa Barbara, CA., Sept. 11-15, 1977,** N79-20910/2ST, NASA-CR-158406, SBRSU-TR-3,.

Abstract: As Geobase Information Systems increase in number, size and complexity, the format compatibility of satellite remote sensing data becomes increasingly more important. Because of the vast and continually increasing quantity of data available from remote sensing systems the utility of these data is increasingly dependent on the degree to which their formats facilitate, hinder, their incorporation into Geobase Information Systems. To merge satellite data into a geobase system requires that they both have a compatible geographic referencing system. Greater acceptance of satellite data by the user community will be facilitated if the data are in a form which most readily corresponds to existing geobase data structures. The conference addressed a number of specific topics and made recommendations.

Location: 17.

78.143

Sinclair, A.J.; Wynne-Edwards, H.R.; Sutherland Brown, A.; University of British Columbia, Vancouver, B.C.. **Analysis of distribution of mineral occurrences in British Columbia,** (in: British Columbia Department of Minerals and Petroleum Resources bulletin, no.68) 1978.

Abstract: Considers the distribution of mineral occurrences in British Columbia recorded in an extensive computerized file. The data are displayed graphically and treated statistically and analytically. Included in the appendices are a series of computer-generated maps and an output of all occurrences used as a basis for the maps by commodities and National Topographic System sheet number. Procedures outlined deal with locations of mineral occurrences and represent a simple quantitative approach to ranking large areas for example, tectonic belts as to general potential for resources of certain metal commodities. Maps showing locations of mineral occurrences represent a basic form of information for developing a practical philosophy relating to exploration and prospecting, for regional resource evaluation, and for land use planning.

78.144

Smith, William H.; William H. Smith and Associates, Inc., Champaign, IL.. **Computer use in mine evaluation and engineering,** (at: Third Symposium on Coal Management Technology. National Coal Association/Bitumin. Coal Research Inc. Coal COnference and Expo 4) (National Coal Assoc.) 1978 pp.80-87.

Abstract: Overviews the successful applications of computers in the evaluation of mining tracts and in mine engineering appraisals. Special emphasis is placed on methods of computer mapping for geological assessment and mine planning. Computer mapping systems can be used to map the distribution of one seam or a series of coal seams in a reserve area, and also to evaluate and tabulate the reserves and to make various comparison studies of the reserves and of the remaining engineering factors.

78.145

Steingraber, Doris; Colville Confederated Tribes. Nespelem, WA.. **Case study of the operational aspects of the Natural Resource Information System NRIS) used for natural resource planning,** PB-295 923/7ST,.

Abstract: Discusses the computer support activities performed in a case study in computer assisted natural resources planning. The case study area is the Colville Indian Reservation located in the central part of the State of Washington. The Natural Resource Information System NRIS) was the computer overlay mapping system selected for use in this study. The objectives of the case study and the actual execution of the case study are described, and the operational aspects of using NRIS in a production environment are discussed and evaluated. An attribute assignment process developed during this project is also described.

Location: 17.

78.146

Steinitz, Carl; Frederick, Charles J.; Goodale, Peter; Harvard University. Landscape Architecture Research Office. **Interaction between urbanization and land quality and quantity in environmental planning and design. The data base, technical documentations,** PB-294 154/0ST,.

Abstract: This report is a technical summary of the development and organization of the data base for the research program on interaction between urbanization and land quality and quantity in environmental planning and design. The data base provides an efficient, accurate, easily used and flexible system to meet the information needs of the various component models of the research effort. The basic unit used to construct the data base is a grid cell of one hectare (2.47 acres). The study area contains 75,600 cells, over half of which represent land undeveloped in 1973. The data base contains four types of data: physiographic and natural systems, man-made elements of land use and land cover, data associated with political jurisdictions and functional zones and data created by combinations of the first three types and/or derived from the operation of the models.

78.147

Stockman, George; L.N.K. Corporation, Silver Spring, MD.. **Toward automatic extraction of cartographic features,** AD-A059 942/3ST,.

Abstract: The problem of automatically extracting map symbology from source imagery is studied. It is concluded that a great of geographic knowledge used by humans, who currently perform this extraction function, must be made available to machines before the function can be automated. Several geographic knowledge sources are discussed and an attempt is made to define paradyms under which knowledge can be encoded and used in the computer. An automatic cartographic feature extraction system (ACES) is sketched which represents a best framework for continuing development on this difficult problem given current achievements. A systems approach is taken with first consideration given to desired outputs and available inputs. It is concluded that input/output technology is far in advance of technology available for interpretation of the data. Emphasis is placed on the use of knowledge by ACES during automatic interpretation of imagery. Many types of knowledge typically used by humans appear difficult to engineer into automatic processes. Use of positional knowledge encoded in geographic data base (GDB) is selected as the most promising avenue. Proposals are given for future research work in that direction.

Location: 17.

78.148

Strome, W.M.; Fleming, E.A.; Bruce, W.D.; Slaney, V.R.; Canada. Department of Energy, Mines and Resources. **LANDSAT imagery - A cartographic reference base,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canada Institute of Surveying) 1978 pp.484-502.

Abstract: For several years, Landsat images have been used operationally in Canada for topographic map revision and new compilations on a relatively small scale. In addition to their conventional mapping applications, satellites have made dynamic mapping practical and Landsat data are being used routinely for ice mapping in the Arctic and for forest fuel mapping. Methods of refining the Landsat data to produce more useful products for mapping are being investigated. The goal of the "Geo-IMAGE" project is to define and produce a demonstration set of high quality Landsat imagery which is digitally enhanced for visual interpretation. Experimental colour photo-maps have been produced which are radiometrically and spatially enhanced as well as cartographically corrected to the standard Canadian UTM map base. Later this year, computer tapes will be available containing Landsat data geometrically corrected to match the UTM map projection.

Location: 07.

78.149

Surette, Ralph; **Land registration: A Maritimes system may take the world title,** (in: Canadian Business, Vol.51,) 1978, Dec. pp.29-31.

Abstract: Discusses the LRIS, a cadastral system in the Maritimes, in terms of its success, economics of operation and potential saleability outside the Maritimes.

Location: 01,21.

78.150

Swann, Richard; Thompson, J.; Daykin, S.E.; **Applications of low cost dense digital terrain models,** (at: Proceedings of the Digital Terrain Models (DTM) Symposium, American Society of Photogrammetry) 1978 pp.141-155.

78.151

Switzer, William A.; Gordon, C.E.; **Canada Geographic Information System introduction,** (series: Canada Land Data System - Canada Geographic Information System), (Canada. Department of Environment. Lands Directorate).

Abstract: Includes three papers: an overview of the CGIS, an overview of its graphics subsystem with examples from one data base, and a list of this subsystem's commands.

Location: 01.

78.152

Symons, D.C.; Taylor, D.R.F., ed.; National Capital Commission. Research and Computer Services, Ottawa, ONT.. Carleton University, Ottawa, ONT.. **Use of geographic base files for utility location and co-ordination, Recent trends in geographic information processing in the National Capital Region,** 0-7709-0040-2, (at: Symposium on Geographic Information Processing) 1978, May pp.12-25.

Abstract: Discusses the need for urban information systems with service facility information, the requirements of such systems, data collection techniques, and utilities mapping by computer.

Location: 19.

78.153

Talvila, Ilmar; Alberta Department of the Attorney General. **Review of systems and procedures: Land titles,** 15, (series: Management and operations master plan study-Vol. II. Working papers), (Decision Dynamics Corporation) 1978, Dec..

Abstract: Reviews the Land Titles system in Alberta, a non-automated cadastral system, and provides recommendations for improvement including computerization of records and the use of micromedia.

Location: 01.

78.154

Task Force on National Surveying and Mapping. Canada. Department of Energy, Mines and Resources. Surveys and Mapping Branch. **Report of the Task Force on National Surveying and Mapping,** 1978, May.

Abstract: Reviews surveying and mapping activities in each branch of the Department of Energy, Mines and Resources, in terms of present and future land data needs. Recommends alternatives for future activities.

Location: 01.

78.155

Taylor, D.R.F., ed.; Carleton University, Ottawa, ONT.. **Recent trends in geographic information processing in the National Capital Region,** 0-7709-0040-2, (at: Symposium on Geographic Information Processing) 1978, May.

Abstract: A collection of papers which concerns new developments in GIS with respect to such areas as mapping software, mapping programes, thematic maps, data encoding and data massaging

Location: 19.

78.156

Teicholz, Eric; Schmitt, Rolf R., ed.; Crellin, Ronald E., ed.; Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Overview of the ODYSSEY geographic information processing system,** (at: Data resources and requirements: Federal and local perspectives/URISA 1978. Volume 1. Contributed papers from the Sixteenth Annual Conference of the Urban and Regional Information Systems Association) (Urban and Regional Systems Association) 1978 pp.164-177.

Abstract: Describes ODYSSEY, an extensible integrated group of independent programme modules for creating, manipulating, editing and displaying geographic data. Describes features of the system and the origin and philosophy behind the basic system concepts. Finally, an annotated data analysis and display example, using ODYSSEY's network overlay capabilities is presented.

Location: 18.

78.157

Trang, Cao Tho; Elder, Evie, ed.; French National Geological Survey and Bureau of Mines. Digital Cartography Section.. **GIMMAP: An example of a geographic information management and mapping system,** (at: Proceedings of the American Congress on Surveying and Mapping, 1978 Fall Technical Meeting (Fall Convention)) (Amercian Congress on Surveying and Mapping) 1978 pp.57-69.

Abstract: Provides a description of an automated mapping system for geological data. Discusses digitization, interactive data editing, and data display features.

Location: 05.

78.158

Thompson, C.N. (Colonel); England. Ordnance Survey, Southampton, England. **Digital mapping in the Ordnance Survey,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.195-219.

Abstract: Describes a pilot project in digital mapping by the Ordnance Survey England. The objectives of the project were to evaluate a digital mapping system in production, gather information on operational costs and computer loadings, and to stimulate outside user interest. The intention to stimulate interest in digital map data by other users led to a Feasibility Study in 1974 to investigate the different needs of potential users of the data primarily in Local Authorities, Public Utilities and Central Government. The findings of this Study indicated that there were two main areas of application: The first associated with the graphic presentation of digital data and the overlaying of the digital map data with users data, the second for the use of digital map data in computer based information systems. This second application requires that the digital map data is structured in a form suitable for computer manipulation. To this end a major software development project was started in 1975 and is now approaching successful completion.

Location: 07.

78.159

Tuel, William G., Jr.; Berry, Carol J.; IBM Sci. Cent., Palo Alto, CA.. **Data bases for geographic facility design and analysis,** (at: 1st Conference on Computing in Civil Engineering) (American Society of Civil Engineers) 1978 pp.449-464.

78.160

Tuinhof, Nanning B.; Nicholls, Gregory M.; Manitoba. Department of Renewable Resources and Transportation Services. **Integrated wildfire and forest inventory management information system,** (in: Forestry chronicle, Vol.54, no.3) 1978 pp.152-155.

Abstract: In 1976 Manitoba established a computerized wildfire recording system which is integrated with the provincial forest inventory data banks. It is designed not only to facilitate data collection but also to provide estimates of timber volume loss records for fire history appraisals and to assist in improved forest management. The system enables foresters to determine volume losses with respect to such parameters as species, age, class and site. It provides computer stored fire data which can be used to update forest inventory area and volume statistics, reforestation for second growth management records, and the recalculation of annual allowable cuts. Data for other resource concerns such as wildlife and watershed management can also be obtained. Also in Social Sciences citation index and Environment periodicals bibliography

Location: 17,20,28,32.

78.161

Turner, J.B.; Ontario. Ministry of Transporation and Communications. Aerial Survey Section, Downsview, ONT.. **M.T.C. (Ministry of Transportation and Communications) digital mapping system**, 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings of the International Symposium) (Canadian Institute of Surveying) 1978 pp.323-327.

Abstract: Describes the Ontario Ministry of Transportation and Communications digital mapping system which has been updated with fully interactive editing capability. The original off-line digital stereo compiling and final light beam drafting stages remain intact, with an off-line interactive editing screen now replacing the manual post edit stage. As well as streamlining the editing process, this addition eliminates retention of errors in the stored data base, providing clean digital terrain data for highway design computer applications and second derivative plotting.

Location: 07.

78.162

Turner, A. Keith; Environment Consultants, Inc., Lakewood, Co.. **Interactive analysis methods for resource mapping**, 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.735-754.

Abstract: An interactive composite mapping system called GMAPS (General Map Analysis and Planning System), has been used to evaluate energy development plans, and make resource and environmental assessments. GMAPS is superior to the traditional transparent overlay methods because it is much cheaper, faster and more quantitative. Using GMAPS, variables and interactions can be easily modified to rapidly investigate an unlimited range of development alternatives. An associated mapping system GCARS, Generalized Computer Aided Route Selection), can generate a set of alternative corridors between specified termini by applying linear programming methods to GMAPS models. The corridors are ranked for suitablility according to environmental and socio-economic criteria.

Location: 07.

78.163

United States. Community and Economic Development Division. General Accounting Office, Washington, D.C.. **National forests - Better planning needed to improve resource management**, PB-283 304/4ST, CED-78-133,.

Abstract: Presents a series of recommendations made by the General Accounting Office for the Forest Service to consider in developing its regulations, guidelines, and manuals for implementing the new land management planning system required by the Forest and Rangeland Renewable Resources Planning Act of 1974 and the National Forest Management Act of 1976.

78.164

United States. Department of Agriculture. Forestry Service. **Integrated inventories of renewable natural resources. General technical report**, RM-55, (United States. Department of Agriculture) 1978, Jan. 8-12.

Abstract: Discusses integrated inventory information requirements, current techniques, need for integrating inventories, land classification schemes, remote sensing, principles for integrating inventories, data processing, information systems, and state of the art.

78.165
United States. Department of Energy. **Energy-related environmental computer graphics systems in the Department of Energy laboratories,** 7706110, (United States. Department of Energy) 1978.

78.166
University of New Brunswick. Department of Surveying and Engineering. **Principal concepts for a long term mapping programme in the Maritime provinces,** (Council of Maritime Premiers. Land Registration and Information Service) 1978, May.

Abstract: Examines the long term user needs for mapping in the Maritimes and the potential of automated mapping and information systems. Proposes preliminary specifications for a mapping programme with details on geocoding, data transfer, mapping symbology and map revision.

Location: 01.

78.167
University of Washington. Department of Civil Engineering, Seattle, WA.. **Regional environmental systems: Assessment of RANN projects. Proceedings of workshop held June 20-24, 1977 at the University of Washington,** PB-282 154/4ST,.

Abstract: Representatives of 18 Regional Environmental Systems (RES) projects funded by RANN met for a workshop to review their results. This report is presented in three volumes. Volume 1, 'Workshop Report,' includes goals of the workshop and reports from the following research groups: Information systems: economic, population and land-use analysis, resources and residual management, ecosystem analysis, and transfer and utilization. Volume 2, 'Assessments of Methodologies,' presents the following papers: 1) Information System Support of Regional Environmental Analysis: 2) Population, Ecnomics, Employment, and Land Use Models, 3) Engineering, Planning and Resource Utilization Models, 4) Ecosystem and Resource Capability Models, 5) Thoughts on Model Evaluation Software), 6) Assessment of RES Experiences, 7) Analytical Methods for Environmental Assessment and Decision Making, and 8) Citizen Participation. Volume 3, 'Project Summaries,' presents overviews of the 18 projects funded.

Location: 17.

78.168
Vallery, Douglas; Ontario. Ministry of the Environment. Water Resources Branch. **STORET (Storage and Retrieval of water resources information),** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.47-68.

Abstract: Discusses the hydrologic referencing system STORET (STOrage and RETrieval of water resource information) in terms of its partial development to-date in the Province of Ontario.

Location: 01.

78.169
Van Demark, Peter H.; Elder, Evie, ed.; Center for Governmental Research Inc., Rochester, N.Y.. **Minicomputer graphics for the University of Wisconsin cartography laboratory,** (at: Proceedings of the American Congress on Surveying and Mapping, 1978 Fall Technical Meeting Fall Convention)) (American Congress on Surveying and Mapping) 1978 pp.404-419.

Abstract: Explains and illustrates the design and implementation of MINIPLOT and related mapping software. Discusses hardware, data encoding, data editing, and file structures. Presents data display examples.

Location: 05.

78.170

Wecksung, M.J.; Wiley, R.A.; Turner, A. Keith; Los Alamos Scientific Laboratory, Los Alamos NM. **GMAPS (General Map Analysis Planning System) user's manual,** LA-6975-M,.

Abstract: Land-use planners involved in sitting analyses must make complex decisions based on their in-depth knowledge of numerous factors. These factors include resource location, accessibility to transportation corridors, and legal, social, and environmental constraints. The General Map Analyses Planning System (GMAPS) is a composite computer mapping system designed to assist the planning team in making these decisions rapidly and efficiently. GMAPS allows the user to define a series of different scenarios and to investigate quickly a wide range of planning alternatives. It is a remote-access interactive system that can be operated by nontechnical personnel from portable terminals at field offices. 11 figures, 1 table.

Location: 17.

78.171

Welin, R.A.; City of Calgary. **Calgary's approach to computer assisted mapping,** (at: American Public Works Association International Public Works Congress and Equipment Show) (City of Calgary) 1978, Oct. 16.

Abstract: Describes the City of Calgary's coordinated control survey network, to which land information can be referenced and the application of this network to Calgary's Computer Assisted Mapping Project for cadastral maps.

Location: 01.

78.172

White, Denis; **Design for polygon overlay,** (in: Harvard papers on geographic information systems, Vol.4,) 1978.

78.173

White, Marvin S. Jr.; United States. Department of Commerce. Bureau of the Census. **State of land data systems technology,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1978.

78.174

Williams, Anthony V.; Elder, Evie, ed.; Pennsylvania State University. Department of Geography. **Interactive cartogram production on a microprocessor graphics system,** (at: Proceedings of the American Congress on Surveying and Mapping 1978 Fall Technical Meeting (Fall Convention)) (American Congress on Surveying and Mapping) 1978 pp.426-431.

Abstract: Describes an interactive method for constructing value-area maps which retain the shapes of the original units.

Location: 05.

78.175

Witiuk, Sid W.; Canada. Statistics Canada. Census Division. **Geographically Referenced Data Storage and Retrieval System,** (at: Proceedings of Seminar on Geographical Referencing) (Ontario. Ministry of Natural Resources) 1978, Sept. pp.152-163.

Abstract: Describes the GRDSR System which offers a standardized approach to non-standardization by relating all geocodes to a common metric reference framework. The system is discussed in terms of its documentation, background, basic concepts, building block representation and encoding, and record linkage and standardization.

Location: 01.

78.176

Wittig, G.; Gesellschaft fur Math. und Datenverarbeitung, St Augustin, Germany. IEEE. ACM. **Interactive manipulation of land use data**, (at: Proceedings of the International Conference. Interactive techniques in computer aided design) (IEEE) 1978 pp.216-222.

Abstract: Discusses the use of interactive graphics in GIS, particularly in map design.

78.177

Wood, Peter M.; Benson, William H.; California University. Lawrence Berkeley Laboratory. **Computer mapping software at the Lawrence Berkeley Laboratory**, LBL-7938, CONF-780749-2, (at: Harvard Computer Graphics Week Conference).

Abstract: A number of Fortran programmes useful for computer mapping and supported by the Computer Science and Applied Mathematics Department for preparing base files and displays of statistical data. Digitizing and editing of geographic base files is maintained by the programs MAPEDIT and ZING. Display of statistical attributes of discrete points, lines, or areas in two dimensions is done by the programme CARTE. Display in three dimensions or on surfaces is accomplished using subroutines from the Integrated Data Display System. All the programmes use a device independent graphics system, GRAFPAC.

78.178

Wood, Peter M.; **Interactive display of polygonal data, Harvard papers on geographic information systems**, 1978.

78.179

Woods Gordon Management Consultants. British Columbia. Ministry of Economic Development. **Report on the land information systems and needs of the British Columbia government**, (Woods, Gordon and Co.) 1978.

Abstract: Provides information required to develop an integrated land information system in B.C., describes current systems in B.C., data needs, the system design, and economics of the proposed system.

Location: 01.

78.180

Wunderlich, Gene; Economics, Statistics, and Cooperatives Service. Natural Resource Economics Division, Washington, D.C.. **Facts about U.S. land ownership**, PB-289 926/8ST, A1B-422,.

Abstract: Knowing who owns U.S. land is important because landownership affects how wealth is distributed nationally and how land is used. Yet the currently fragmented and incomplete status of ownership data means only gross generalities are possible. Private individuals and corporations own about 60 percent of U.S. land while Federal, state, and local governments own the rest. Getting detail is difficult because no central source of information exists and records often do not show separated interests. The U.S. Department of Agriculture is conducting a national survey of landownership that will resolve several of these data problems.

78.181

Yoeli, Pinhas; Tel Aviv University. Israel. **Drawing of topographical maps with basic cartographic subroutines**, (at: Proceedings of the Jerusalem Conference on Information Technology, 3rd) (North-Holland Publishing Company) 1978 pp.697-703.

Abstract: This paper deals with the computer assisted treatment of the planimetric contents of topographical maps. It is assumed, that the data is collected from either terrestrial surveys or aerial photographs, or is digitized from large-scale topographic maps used as a source for the creation of a basic planimetric data bank.

78.182

Young, G.J.; Glynn, J.E.; Reid, I.A.; Sherstone, D.A.; Canada. Department of Fisheries and Environment. Inland Waters Directorate. Water Resources Branch, Ottawa, ONT.. **Mapping the Athabasca Glacier, Alberta, Canada, by Orthophotography and by conventional methods,** 0-919088-05-8, (at: New technology for mapping. Technical papers from Commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.643-659.

Abstract: Describes mapping of the Athabasca, a valley glacier, by standard aerial and terrestrial photogrammetric plotting and by a relatively new orthophoto process. Describes the Gestalt GPM II orthophoto-mapping system which produces an orthophoto, stereo-mate and digital terrain model. Comparisons are made between the orthophotomap and conventional maps in terms of the accuracy of elevation information and the clarity of visual portrayal. The time taken to produce the maps and the costs involved are also considered.

Location: 07.

78.183

Young, Mary E.H.; Taylor, D.R.F., ed.; Canada. Surveys and Mapping Branch. Automated Cartography Section. Carleton University, Ottawa, ONT.. **Digital mapping and automated cartography system of the Department of Energy, Mines and Resources, Recent trends in geographic information processing in the National Capital Region,** 0-7709-0040-2, (at: Symposium on Geographic Information Processing) 1978, May pp.1-11.

Abstract: Describes the present state of the application of computer graphics technology to mapping programs in the Surveys and Mapping Branch, especially the 1:50,000 mapping programme. Much work remains to be done before a fully integrated, efficient production system is firmly established, nevertheless, all the necessary elements have been assembled and proved out.

Location: 19.

78.184

Young, Mary E.H.; National Technical Information Service. **Urban information systems. Part 1. General. Volume 1 1964-1976 (A bibliography with abstracts),** NTIS/PS-78/1027/8ST,.

Abstract: Research is cited on urban management and municipal information systems. Part 1 includes reports not sponsored by USAC (Urban Information Systems Interagency Committee). The reports are intended for use by urban administrators and planners at all levels of management. (This updated bibliography contains 170 abstracts, none of which are new entries to the previous edition.)

78.185

Young, Mary E.H.; National Technical Information Service. **Urban information systems. Part 1. General. Volume 2 1977-Sept. (A bibliography with extracts),.**

Abstract: Research is cited on urban management and municipal information systems. Part 1 includes reports not sponsored by USAC (Urban Information Systems Interagency Committee). The reports are intended for use by urban administrators and planners at all levels of management. (This updated bibliography contains 118 abstracts, 62 of which are new entries to the previous edition.)

78.186

Young, William H.; Isbell, Douglas M.; Riverside County Flood Control and Water Conservation District, Riverside, CA.. **Production mapping with orthophoto digital terrain models,** 0-919088-05-8, (at: New technology for mapping. Technical papers from commission 4. Proceedings International Symposium) (Canadian Institute of Surveying) 1978 pp.328-353.

Abstract: Having produced topographic maps for the past twenty years for engineering, planning and design, the District was faced with ever rising costs and sought means to obtain a quality product economically. A first step was

the use of orthophotography as a base for topographic mapping. The second step was automating the drawing of contours, accomplished by digitizing the scan of the stereoscopic image during production of the orthophoto. The digital data was then converted to a finished contour-orthophoto map through the use of specialized computer processing and a high speed flatbed plotter. By-products of the system we are presently producing are automatic cross sectioning from the digital data base, volumes, flood plain limits, plan and profile sheets, and 3-D perspective views. This automated process resulted in substantial reductions in map-building time and cost.
Location: 07.

78.187
Zarzycki, J.M.; Canada. Department of Energy, Mines and Resources. Topographical Survey. **Integrated digital mapping system,** (in: Canadian surveyor, Vol.32, no.4) 1978, Dec. pp.443-452.
Abstract: Discusses the digital interactive photogrammetric data acquisition system, interactive cartographic editing and automated drafting. The concepts of digital topographic data bank and data base are discussed as well as the requirements for selective retrieval and data base query language capability.
Location: 01, 05, 10, 20, 21, 23, 28, 36.

78.188
CAMRAS, (in: Land data newsletter: Systems and services for positional information, Vol.1,) 1978, November.
Abstract: Discusses the background and purpose of CAMRAS, an information system for planning, engineering and management applications.
Location: 01.

78.189
Data on 80,000 reservoirs now available to industry, (in: World oil, Vol.186, no.1) 1978 pp.112-116.
Abstract: Discusses the Petroleum Data System (PDS), a data base containing basic information on nearly all oil and gas reservoirs in the U.S. and Canada, which is possible by phone. Data include non-proprietary information on reservoir properties, status, production, fluid analysis, secondary/tertiary recovery, etc. Stresses the importance of additional input to make the system more useful.
Location: 01.

78.190
Geographic basing: Key to computer land use applications, (in: Government executive, Vol.10, no.7) 1978, July pp.56-58.
Abstract: Concerns BASIS which is a geographic data base for the San Francisco Bay Area, and is used for planning applications. Describes data storage and file structures of the system.

78.191
Interactive mini system improves management of National Forest, (in: Computerworld, Vol.12, no.42) 1978, Oct. 16 pp.69, 74.
Abstract: Management of Mt. Hood National Forest's timber harvest is today under the supervision of an interactive minicomputer system. Mt. Hood previously used the Dept. of Agriculture's centralized computer center in Ft. Collins, Colo, but when that system became overloaded and usage costs became too high, it began a 2-year evaluation project of computing alternatives. The system finally chosen incorporates a Prime Computer Inc. Model 300 virtual memory CPU that accommodates up to 31 simultaneous users. It currently performs more than 30 applications including preliminary computations of timber to be harvested, impact of the harvest, designing logging systems, keeping track of paper manufacturer's bidding transactions, etc. Using remote terminals at the timber bid site, Mt. Hood can now document and calculate the process.
Location: 27.

78.192

Proceedings of Seminar on Geographical Referencing, Toronto, Ont., Sept. 27, 28, 1978, (Ontario. Ministry of Natural Resources) 1978, Sept..

Abstract: Various geographical referencing systems in use in government are presented which illustrate the need for common referencing standards. Potential standards for geographically referencing data and the findings and recommendations of pertinent committees are also included.

Location: 01.

1979
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79.001

Aangeenbrug, Robert T.; Greenup, Wilbur, ed.; University of Kansas. Department of Geography. **Automation and cartography: A progress report 1974-1977**, (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979.

Abstract: Describes past Auto Cart conferences and presents a review of automated mapping with respect to such topics as user needs, production speed, hardware advances, standardization, and error reduction.

Location: 01.

79.002

Abdoshah, K.; Klinger, A.; Army Engineer Topographic Laboratories, Fort Belvoir, VA.. **Weighted line-finding algorithm**, AD-A076, ETL-0200,.

Abstract: Introduces two new algorithms to detect a line in a digitized picture. The algorithms are compared with the Hough algorithm, and their computational advantages are shown. We discuss the potential for, and the use of, the algorithms in applications, including the use of imagery in digital cartography.

79.003

Anderson, Robert H.; Shapiro, Norman Z.; Rand Corporation, Santa Monica, CA.. **Design considerations for computer-based interactive map display systems. Final report**, AD-A066 395/5ST, RAND/R-2382-ARPA,.

Abstract: A discussion of the key features of an interactive map display system that affect both the usefulness of the system and the design and architecture of its hardware and software. Recent developments in computer graphics offer the possibility of creating interactive map display systems having many of the advantages of traditional paper maps, but significant additional advantages as well. This report presents observations and guidelines for developers of inneractive p systems. The techniques and design principles discussed are applicable to command and control systems ranging from support of a field commander through systems tailored to the needs of the National Command Authority.

79.004

Antenucci, John; Maryland. Department of State Planning. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Maryland Automated Geographic Information System: Expansions and applications in state government, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3**, 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.5-21.

Abstract: Describes the physical design of the MAGI system and its data base and notes the implications/rationale for certain decisions. Then describes specific applications of the system.

Location: 17.

79.005

Antenucci, John; Miller, Stephen A.; Brunori, Carlo R.; Maryland. Department of State Planning. **Maryland Wildlife Resources Information Retrieval System**, (at: Transactions of the 44th North American Wildlife and Natural Resources Conference) 1979, Oct. pp.446-456.

Abstract: Discusses the Wildlife Information Retrieval System in terms of its objectives, the information base being utilized (MAGI), the application of the system to the decision-making process and the events that led to its development. The system employs geographically-referenced habitat variables and wildlife sightings that can be graphically presented on computer maps both independently or in overlayed combinations.

Location: 17.

79.006

Ayers, Eunice; Registry of Deeds. Forsyth County. Winston-Salem, N.C.. **Juridical data system,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.235-243.

Abstract: There were numerous critical issues which had to be addressed in the development of the Forsyth County Land Records Information System. This paper reviews some of the issues which I consider to be most important. The issues fall into three categories: Management, Technical, and Institutional. Management issues include the clarification of roles and responsibilities of the (1) Project Manager, (2) the consultant and (3) the user committee. Two important technical concerns are data security and determination of the unique identifier. Institutional issues include relationships with the local bar association and state legislation and legal changes required to implement fully a comprehensive land data system.

79.007

Banz, George; Urbanprobe Associates, Ltd.. **Analysis: Land use planning can benefit from wider computer use,** (in: Canadian datasystems, Vol.11, no.10) 1979, Oct. pp.44-45.

Abstract: Discusses the potential for computer systems for use in planning, and the difficulties in introducing automation in terms of economics, user needs and user acceptance.

Location: 01,02,05,06,09,19,20,23,27,28,33.

79.008

Bathke, William L.; American Public Works Association. CAMRAS Program. **Computer assisted mapping and records activities systems: CAMRAS,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.121-141.

Abstract: The American Public Works Association initiated and is sponsoring the development of the Computer-Assisted Mapping and Record Activities System (CAMRAS) Program. The CAMRAS programme provides a system for a joint-use planning, engineering and management tool that can greatly improve speed and accuracy in compiling, transferring, and using information which provides an economical retrieval of important data needed by a large number and variety of public agencies and utility companies operating within a common geographic area. The specific objectives of the programme are (1) to develop, promulgate, and implement suggested procedures for jointly funded, and shared use, computer-assisted, geo-based location record systems, and (2) to initiate, develop, test, and operate a working system of a size and scope to provide a wide range of measurable and user-oriented data. Specific end products of the programme includes: (1) documentation of the entire test system with procedures for the conduct of problem definition, feasibility, benefit/cost ratio, systems specifications, and prebid vendor analysis, (2) model performance specifications for operational systems, data conversion, photogrammetry and aerial photography, (3) model organizational arrangements and interagency agreements, and (4) operator training manuals. Memphis, Tennessee is serving as the site of the model test application which is to be conducted over a three year period at a funding level of approximately $1.0 million.

Location: 17.

79.009

Bathke, William L.; VTN Corporation. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Computer Assisted Mapping and Records Activities Systems: CAMRAS, Urban, regional and state applications. Plus a special section on cadastral systems. Volume** 3, 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.159-167.

Abstract: Concerns CAMRAS, a user-oriented system for retrieval, manipulation, and analysis of shared geographic information. Describes a test of CAMRAS and considers reasons for implementing automated mapping and databases for cadastral information.

Location: 17.

79.010

Bathke, William L.; **Land records and resource information systems: An assessment from an administrative point of view,** (at: Proceedings of the American Congress on Surveying and Mapping, Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) 1979 pp.380-387.

Abstract: The topics of Land Records and Resource Information Systems are now and have been the focus of much talk and proportionately little action. Selected projects and much paper shuffling, complemented by state-of-the-art data processing technology, are providing some insights. However, the apparent inactivity, as evidenced by the small number of ongoing programs, may perhaps be attributed to the astute administrators who have their own program assessment points of view. This paper looks at these administrative assessment criteria and relates them to selected projects in North America.

79.011

Baumann, P.R.; State University of New York. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Computer based instructional system for teaching thematic mapping, Computer mapping in education, research and medicine. Volume** 5, 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.5-10.

Abstract: Discusses the application of automated mapping for instruction in the design of thematic maps and in the use of these maps as a tool in research and communication. Describes the system used for mapping, instructional procedures, and further educational applications.

Location: 17.

79.012

Bavinger, William A.; Rowe, Peter G.; Rice University. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Speakeasy programs, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.5-10.

Abstract: Describes speakeasy, a general data processing system, and RAGIS, an extension of speakeasy, aimed specifically at geographic data processing. Discusses the interactive capabilities, and English-syntax user language of the system with respect to use by the public sector.

Location: 17.

79.013

Beck, Franics J.; Plasker, James R.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **USGS digital cartographic pilot projects,** (at: Proceedings of the American Congress on Surveying and Mapping 39th Annual Meeting, 1979) (American Congress on Surveying and Mapping) 1979 pp.300-305.

Abstract: The Geological Survey has been developing a Digital Cartographic Applications Program directed toward research, pilot projects, and the establishment of a proto type production facility. The pilot projects have been selected in cooperation with various Federal and State agencies and have afforded an excellent opportunity to evaluate data format, hardware and software needs, digitizing techniques, attribute codes, and data-base structure. With the experience offered by these projects and the valuable feedback expected from the cooperators, the USGS is formulating a production programme to meet the requirements for digital cartographic data.

79.014

Blachut, T.J., Ed.; Chrzanowski, Adam; Saastamoinen, J.; **Urban surveying and mapping**, 0-387-90344-5, (Springer-Verlag) 1979.

Abstract: Aims to establish standards in urban surveying and urban mapping and to aid in building surveying and mapping programmes for use in urban planning applications.

Location: 06.

79.015

Bladh, Kent; Malmqvist, Lennart; Lund Institute of Technology, Sweden. **Color plotter for presentation of geodata using three electrically controlled ink jets**, 0016-7142, (in: Geoexploration, Vol.17, no.2) 1979, May pp.89-110.

Abstract: A color plotter system especially designed for presentation of geodata is described. It is based on an ink jet method allowing the electrical control of three colored ink jets at frequencies up to 100 kHz. An application of this method to a computer graphic system is described. This system has been applied to geodata presentation and two examples from aeromagnetic surveys are shown. Finally, an extended interactive system for map production also containing a digitizing unit is discussed.

Location: 20,25,28.

79.016

Blakemore, Michael J.; Lloyd, P.E.; University of Bristol. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Interactive digitizing and display procedures for a computer-based industrial information system, Mapping software and cartographic data bases. Volume 2**, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.11-20.

Abstract: Describes a subsystem of mapping software for use in an industrial information system. Discusses digitization, data manipulation, and data display features of the subsystem and provides mapping software descriptions.

Location: 17.

79.017

Booz, Allen, and Hamilton Inc.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. United States. Department of Housing and Urban Development. **State-of-the-art research bibliography on mapping and surveying, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3**, 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.183-195.

Abstract: The bibliography is organized by author and contains those items which pertain to parcel identification, surveying and mapping. Each entry includes the author, article, publication or proceeding, and date of the article. The last line(s) contain the general heading(s) which the article addresses. This is intended to provide the reader with a better feel for the scope of the article.

Location: 17.

79.018

Box, Elgene; University of North Carolina. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **MAPCOUNT series of programs for analysis and manipulation of SYMAP results, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.21-29.

Abstract: Concerns four software mapping programmes designed for use the SYMAP, which perform area calculation boundary digitization, overprinting and mathematical overlaying. Details capabilities and limitations of each programme in terms of accuracy, error correction, and data display.

79.019

Box, Elgene; University of North Carolina. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Use of synagraphic computer mapping in geoecology, Computer mapping in education, research and medicine. Volume 5,** 0-89866-0-14-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.11-27.

Abstract: Considers SYMAP as a research tool in geoecological modelling, mapping and analysis. Describes data analysis and data manipulation capabilities of accompanying SYMPA-oriented mapping software in area calculations, overlaying and boundary digitization.

Location: 17.

79.020

Boyle, A. Raymond; Palermo, Joe; Arazi, Efraim; Baumann, John; Clark, Richard; Switzer, William A.; Laub, Leonard; Kreifelts, Thomas; Greenup, Wilbur, ed.; **Digital hardware: Mass digitization,** (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.235-272.

Abstract: A collection of papers which describes the capabilities and disadvantages of various raster scanners used by several agencies (primarily mapping applications) with some emphasis on the problems of conversion of raster scanner format to vector format.

Location: 01.

79.021

Boyle, A. Raymond; Jamberdino, A.; Laub, Leonard; Zernike, Frits; Zech, R.G.; Heard, Harry; Opitz, Bruce K.; Greenup, Wilbur, ed.; **Digital hardware: Mass storage,** (at: Auto Cart 3, Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.273-335.

Abstract: Presents discussions on recent (1978) hardware developments for mass data storage. Provides details as to data storage methods, economics, storage capacities, and rates of data recording, duplicating, and access to data for storage devices (digital and video disks, wide band optical storage, direct digital recording and others).

Location: 01.

79.022

Boyle, A. Raymond; Broglie, James (Major); Walko, Vlad; Greenup, Wilbur, ed.; University of Saskatchewan. Department of Electrical Engineering, Saskatoon, SASK.. **General technology - Audio input/output,** (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.410-418.

Abstract: Deals with automatic speech processing with respect to voice input of data for automated mapping applications and also audio output of data which, at present, has no cartographic application.

Location: 01.

79.023

Boyle, A. Raymond; Smith, Norman; McGrath, Robert; Kidwell, Richard; Gray, Charles R.; Greenup, Wilbur, ed.; **Hard copy display,** (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.381-409.

Abstract: Discusses, from the user's viewpoint, several kinds of hardware used in automated mapping for hard copy production raster plotters flatbed plotters, CRT plotters, rotating mirror laser beam plotters and digital and laser plate makers are described in terms of the type of image produced, size limitations, resolution and accuracy, and production time.

Location: 01.

79.024

Boyle, A. Raymond; Arazi, Efraim; Hoinkes, Christian; Greenup, Wilbur, ed.; University of Saskatchewan. Department of Electrical Engineering, Saskatoon, SASK.. **Small operational system,** (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.419-436.

Abstract: Describes a graphic design system used by Sci Tex with emphasis on the hardware, especially the use of raster format processing, along with a system used in Sweden for the production of high quality maps.

Location: 01.

79.025

Boyle, A. Raymond; Durbeck, Robert C.; Slottow, Eugene; Greenup, Wilbur, ed.; University of Saskatchewan. Department of Electrical Engineering, Saskatoon, SASK.. **Soft copy displays,** (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.336-380.

Abstract: Discusses two types of graphics display terminals: Light value technologies, and plasma display panels. Compares these to the more popular CRT method of data display with respect to economics and image resolution, and also provides details as to how these new methods work with illustrations of the displays produced.

Location: 01.

79.026

Bracken, P.A.; Van Wie, P.H.; Dalton, J.T.; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Computer mapping software on the AOIPS, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.31-41.

Abstract: Describes the Atmospheric and Oceanigraphic information Processing System (AOIPS), and interactive, minicomputer based processing and display system used primarily for information extraction and image mapping. Discusses user needs, and details an automated mapping application, WRDMS (for hydrological land cover mapping.)

Location: 17.

79.027

Brassel, Kurt E.; Utano, Jack J.; **Design strategies for continuous-tone area mapping,** (in: American cartographer, Vol.6, no.1) 1979.

Location: 20,36.

79.028

Bryant, Nevin A.; Zobrist, Albert L.; Jet Propulsion Laboratory, Pasadena, CA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Image Based Information System: Architecture for integrating satellite imagery and cartographic data bases, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.43-48.

Abstract: Discusses the general requirements of a GIS and indicates how IBIS (Image Based Information System) is able to meet these requirements. Also provides descriptions of IBIS software for data manipulation and data analysis.

Location: 17.

79.029

Burkhart, B.R.; University of California. Lawrence Berkeley Laboratory. **Cartographic base files at Lawrence Berkeley Laboratory: 1978 inventory,** LBL-8707,.

Abstract: This inventory describes the cartographic base files for the display portion of Lawrence Berkeley Laboratory's Socio-Economic-Environmental--Demographic Information System (SEEDIS) thematic mapping program, CARTE. The map file descriptions include a contact person, abstract, original data source, availability, record contents, and a plot of each file. The files are in polygon format for use within the computer environment at LBL.

79.030

Burton, Warren; University of East Anglia. School of Computing Studies and Accountancy. **Logical and physical data types in geographical information systems,** (in: Geoprocessing, Vol.1, no.2) 1979, Dec. pp.167-181.

Abstract: Considers provision of locational data types in high level programming languages and data base systems and base systems and describes a data base management system for processing spatial data without user concern about data type.

Location: 20.

79.031

Byler, Richard P.; Delaware Valley Regional Planning Commission. **Building a constituency for better mapping and land records and mastering the technology-the RMLR Southeastern Pennsylvania experience.,** (at: Land data systems row. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.161-179.

Abstract: Five major counties, five major utilities and other interests in Southeastern Pennsylvania are working together through the Regional Mapping and Land Records Program (RMLR) based at the Delaware Valley Regional Planning Commission (DVRPC). The programme's purpose is through a Mapping Pilot Project is to test the costs, benefits, and methodology and applications of large scale digital mapping and related land records improvements. "State of the art" technology, in direct stereo digitization and orthophotos from the same model set-up and cooperative costs sharing, is being tested. Hopefully, an eventual cost shared regional system will evolve. Utility, tax mapping, and some planning-environmental applications are also in the initial phase.

79.032

Canada. Spatial Data Transfer Committee. **Standard format for the transfer of geocoded information in spatial data polygon files,** (series: CCRS research report), (Canada. Energy, Mines and Resources) 1979, Dec..

Abstract: Describes a standard format for the transfer, via computer compatible tape, of geocoded information in spatial data polygon files. The format was developed through the mutual efforts of four departments in the Government of Canada: Energy, Mines, and Resources, Environment Canada, Statistics Canada, and Agriculture Canada. Staff from these departments established the Spatial Data Transfer Committee (SDTC), which completed the design of this format in 1979. The format described in this report also conforms to "The CCT Family of Tape Formats" superstructure developed developed by the LANDSAT Ground Station Operators Working Group. The SDTC intends to use this format for the exchange of geocoded information.

Location: 01.

79.033

Canada. Statistics Canada. Office of the Senior Advisor on Integration. **Towards a comprehensive framework for environmental statistics: A stress-response approach,** 3-0001-507, 1979, May.

Abstract: Covers the need for environmental information, an ecological perspective and the design of environmental information systems, and recent experiences of Statistics Canada towards developing frameworks for environmental statistics.

Location: 01.

79.034
Carrigan, Brian; National Technical Information Service. **Interactive computer graphics. Volume 2. Feb. 1976-1977 (Citations from the Engineering Data Base.) Report from 1976-77**, NTIS/PS-79/0279/4ST,.
Abstract: The bibliography cites abstracts from worldwide literature on computer hardware and computer software implementation of interactive graphics systems. Included are applications in circuit design, electrocardiography, transportation systems, cartography, architectural design, structural engineering, education, and curve fitting. (This updated bibliography contains 198 abstracts, none of which are new entries to the previous edition.)

79.035
Carrigan, Brian; National Technical Information Service. **Interactive computer graphics. Volume 2. 1976-Jan. 1979 (Citations from the NTIS Data Base),** NTIS/PS-79/0278/6ST,.
Abstract: Federally-funded studies are cited on hardware and software implementation for interactive graphics systems. The bibliography includes applications in education, electrophysiology, architectural design, structural engineering, transportation systems, chemistry, cartography, dance choreography, aircraft displays, and curve fitting. (This updated, bibliography contains 156 abstracts, 37 of which are new entries to the previous edition.)

79.036
Carrigan, Brian; National Technical Information Service. **Interactive computer graphics. Volume 3. 1978-Feb. 1979 (citations from the Engineering Index Data Base). Report for 1978-Feb. 79**, NTIS/PS-79/0280/2ST,.
Abstract: The bibliography cites abstracts from worldwide literature on computer hardware and computer software implementation of interactive graphics systems. Included applications to circuit design, electrocardiography, transportation systems, cartography, architectural design, structural engineering, education, and curve fitting. (This updated bibliography contains 141 abstracts, 136 of which are new entries to the previous edition.)

79.037
Carrigan, Brian; National Technical Information Service. **Printers (A bibliography with abstracts). Report for 1964-Nov. 79**, PB80-801343,.
Abstract: The bibliography cites research on computer printers, contact printers, projection printers, and microfilm reader-printers. Studies are included on the use of these printers in computer graphics, aerial photography, cartography, and data processing. (This updated bibliography contains 176 abstracts, 4 of which are new entries to the previous edition.)

79.038
Charles River Associates, Inc. Boston, MA.. **Design for coal supply analysis system. Final report**, EPRI-EA-1086,.
Abstract: Coal supply forecasts are used by EPRI to assess the potential of new technologies and by member utilities for strategic planning. Developing realistic coal price-quantity relationships for technology assessment is one type of activity in the EPRI Energy Supply Program, and providing information on coal forecasts to member utilities is another. To support activities such as these, EPRI is developing a computerized Coal Supply Analysis System (CSAS). The CSAS contains procedures for developing coal analyses and a data base to support them. The procedures include methods to estimate available coal resources, coal extraction costs, coal preparation costs, and regional coal supply functions, and to support price and production forecasts. The basic data base includes information on coal resources (resources, production),coal mining technology, and coal prices. Procedures are supported by data bases containing information developed from the basic data files or from other procedures in

CSAS or other systems (demand, transport). Because CSAS supports analyses produced on a regular basis as well as special analyses, the system should provide flexibility for unanticipated analyses as well as cost-effective methods for frequently used procedures. To provide this capability, there should be a flexible data base management system, a variety of programming languages under a common operating system, and the ability to access nonresident programs.

79.039

Chu, N.Y.; Anuta, P.E.; Purdue University. **Automatic colour map digitization by special classification**, (in: Photogrammetric engineering and remote sensing, Vol.45, no.4) 1979, Apr. pp.507-515.

Abstract: A method of converting polygon map information into a digital form which does not require manual tracing of polygon edges is discussed. The maps must be in color-coded format with a unique color for each category in the map. Color scanning using a microdensitometer is employed and a three-channel color separation digital data set is generated. The digital data are then classified by using a Gaussian maximum likelihood classifier, and the resulting digitized map is evaluated. Very good agreement is observed between the classified and original map.

Location: 05,09,10,14,20,21,23,24,27,28,32,36.

79.040

Chulvick, Charles E.; University of Edinburgh. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Application of GIMMS as a planning tool, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3**, 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.23-34.

Abstract: Concerns a research project aimed at introducing planners to computer techniques, providing as examples, two planning applications using GIMMS: mapping census data, and mapping locational data.

Location: 17.

79.041

Cihlar, Josef; Canada Centre for Remote Sensing, Ottawa, Ont.. **Workshop on Renewable Resource Information Systems for the Maritimes. First draft**, 79-1, (series: CCRS Technical memorandum),.

Abstract: Summarizes material, concepts and ideas presented during a workshop on remote sensing data and resource information systems. Discusses resource data needs and the impact of automation. Reviews currently available Canadian resource information systems.

Location: 01,17.

79.042

Comeau, M.A.; Nova Scotia. Department of Lands and Forests. **Cape Breton Budworm Graphics Data Base (BUDWORM3)**, 1, (series: Canada Land Data System-Canada Geographic Information System. CGIS applications report), (Canada. Department of Environment. Lands Directorate. Canada land Data Systems Division) 1979, June.

Abstract: Concerns to graphics data base BUDWORM3, which has been created for the Department of Lands and Forests to assist in their studies of spruce budworm damage on Cape Breton Island. Presents an overview of the study area, a brief description of the data base and the methodology used in creating it, and a detailed description of the variables available in the graphics data base. Sample outputs from an interactive graphics session are included in the appendix.

Location: 01.

79.043
Cook, Robert N.; University of Cincinnati. College of Law. **Multi-purpose land data system for managing land and environment,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.15-27.

Abstract: A national multi-purpose land data system is needed in Canada, Mexico, the United States and other countries for the wise management of land and environment. There is no adequate substitute for such a system. The cost of a multipurpose land data system is insignificant when past, present and possible future monetary and other losses from mismanagement of land and environment are considered. Furthermore, vast amounts of money are presently being spent annually for the collection, storage, and retrieval of land data by inadequate, duplicative, and independent land data systems, including land title records. Federal guidelines will be needed to expedite the implementation of a national multi-purpose land data system consisting of interrelated local and state sub-systems. It would be a waste of money to implement independent local or state systems.

79.044
Cooke, Donald F.; Geoprocessing Sciences, Corinth, VT.. **Technical problems in a multipurpose land data system: The Digital Geographic Subsystem,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.93-95.

Abstract: The fundamental technical problem of a multipurpose land data system is the treatment of geographic information. This function is best performed by a special purpose Digital Geographic Subsystem (DGS). The DGS will provide a linkage between diverse users of a multipurpose system and will alleviate or eliminate problems with parcel identification, map accuracy and access to geographic information.

79.045
Costello, Thomas R.; Lund, H. Gyde; Frayer, W.E., ed.; United States. Department of the Interior. Bureau of Land Management. **Building an integrated system of inventories: A BLM example,** (at: Forest resources inventories. Proceedings of a Workshop, Vol. 1) (Colorado State University. Department of Forest and Wood Sciences) 1979 pp.10-22.

Abstract: Describes data merging of resource inventories with respect to terminology, and input and output standards. Provides forestry examples of integrated inventories.

Location: 10.

79.046
Council of Maritime Premiers. Land Registration and Information Service. **Canadian dictionary of terms for topographic features (pilot project),** (Council of Maritime Premiers. LRIS) 1979 Sept. 20.

Abstract: A dictionary of topographic terms in French and English, created to permit development of data classification standards.

Location: 01.

79.047
Cowen, David J.; Crosley, Powel V.; Holland, Michael; University of South Carolina, Columbia. **Automated mapping of South Carolina,** (at: Proceedings of the American Congress on Surveying and Mapping Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) 1979 pp.247-254.

Abstract: The State of South Carolina recently prepared a four-color land use and land cover map for its Coastal Zone Management Plan. The project involved combining USGS data with more detailed information collected locally. The screened negatives were photographically prepared from scribecoats plotted on

Kongsberg plotter. The plots and accompanying area statistics were generated by the USGS Geography Program's GIRAS software at the University of South Carolina. The project represents a successful example of the GIRAS system and the land use and land cover data by a state for use in another Federal Program.

79.048

Cowen, David J.; Walters, George; Feinberg, Kenneth; Holland, Michael; Vang, Alfred; University of South Carolina. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Evolution of the South Carolina Coastal Mapping Program, Computer mapping in education, research and medicine. Volume 5,** 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.29-36.

Abstract: Discusses the development of the South Carolina Coastal Mapping Program as an example of the experiences that any state becoming involved in automated geographical data handling would encounter. Presents a case history of an incremental approach to the conceptualization, design, construction and operationalization of a system in which a state university played a major role. Concludes that such an incremental approach is much more realistic than is the process advocated in the idealized model found in the literature of system developed.

Location: 17.

79.049

Cowen, David J.; University of South Carolina. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Introductory computer mapping instruction at the University of South Carolina, Computer mapping in education, research and medicine. Volume 5,** 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.37-48.

Abstract: Reports on the evolution, objectives, method, and experiences relating to the development and presentation of a computer mapping course at the Univesity of South Carolina.

Location: 17.

79.050

Cox, Carleton, W.; University of Georgia, Athens, GA.. **Computer generated areal symbols: some design considerations,** (at: Proceedings of the American Congress on Surveying and Mapping Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) 1979 pp.161-169.

Abstract: Individuals producing computer maps should have two principal concerns: getting the programme to operate successfully, and designing the map so that it portrays the data in the most effective manner. User's mannuals which accompany widely used programs such as SYMAP, GRIDS, CALFORM, or CORMAP generally provide adequate operating instructions to fulfull the first concern. They do not, however, offer reliable advice regarding map design. This study examines the problem of areal symbolization as it relates to computer maps. Research on the visual properties of computer-produced areal symbols is summarized and suggestions for the solution of some related map design problems are presented.

79.051

Cross, Richard Hunter (III); Cambridge Research Institute. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Case study of computer-aided transmission line siting, Computer mapping in natural resources and the environment. Volume 4,** 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.13-33.

Abstract: Considers a case study to evaluate the role of automation in decision-making. Describes data collection, data base development and data displays used in evaluation of possible routes for transmission lines.

Location: 17.

79.052

Cy Chit-sze, Yeung; City of Toronto Planning Board. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **City of Toronto Planning Board Computer Mapping System, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection). (Harvard University) 1979 pp.237-240.

Abstract: Discusses the data display capabilities and limitations of CTPB's Computer Mapping System, describes data needs for this mapping software package and supplies a sample run.

Location: 17.

79.053

Dalton, J.T.; Billingsley, J.; Quann, J.; Bracken, P.A.; NASA. GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.. **Interactive colour map displays of domestic information**, (in: Computer graphics, a quarterly report of SIGGRAPH-ACM, Vol.13, no.2) (at: Sixth Annual Conference on Computer Graphics and Interactive Techniques, SIGGRAPH '79 Proceedings) 1979, August pp.226-233.

Abstract: Discusses the operation of the Domestic Information Display System, presents sample output products, and describes in detail the software and hardware organization through which the system flexibility and rapid response were achieved.

Location: 16,28.

79.054

Dangermond, Jack P.; Environmental Systems Research Institute, Redlands, Ca.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Case study of the Zulia Regional Planning Study, describing work completed, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3**, 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.35-62.

Abstract: Describes a land use planning project in Venezuela with respect to techniques of data acquisition, data base development, data manipulation and analysis and data display and discusses results of and reaction to the project.

Location: 17.

79.055

Darragh, Ian; Canadian Geographic. **How computers are improving our maps**, (in: Canadian geographic, Vol.99, no.2) 1979 pp.44-49.

Abstract: Makes reference to the efforts of various governmental agencies towards computer-assisted mapping including Canada Department of Energy, Mines and Resources. Describes in detail the processes involved in automated mapping.

Location: 01.

79.056

Davis, F.G.F., Jr.; Smith, J.W.; United States. Department of Energy. Laramie Energy Technology Center. Laramie, WY.. **Case study of an application of computer mapping in oil-shale resource mapping**, CONF-790739-2, (at: Harvard Computer Graphics Week '79).

Abstract: The Laramie Energy Technology Center, U.S. Department of Energy, is responsible for evaluating the resources of potential oil and the deposit characteristics of oil shales of the Green River Formation in Colorado, Utah, and Wyoming. While the total oil shale resource represents perhaps 2 trillion barrels of oil, only parts of this total are suitable for any particular development process. To evaluate the resource according to deposit characteristics, a computer system for making resource calculations and geological maps has been established. The system generates resource tables where the calculations have been performed over user-defined geological intervals. The system also has the capability of making area calculations and generating resource maps of geological quality. The graphics package that generates the maps uses coreholde assay data and digitized map data. The generated maps may include the following features: selected drainages, towns, political boundaries, townships and section surveys, and corehole locations. The maps are then generated according to user-defined scales.

79.057

DeRamus, Judson Davie, Jr.; North Carolina. House of Representatives Member. **Role of the legistlature in the modernization of North Carolina's land records information systems,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.205-211.

Abstract: The role of the legislature in the modernization of North Carolina's land records information systems began three and one-half years ago when the 1975 General Assembly directed the Legislative Research Commission to make a study of those systems and make recommendations concerning ways to modernize and make them more uniform. A prior study by the North Carolina Bar Association and the Institute of Government of the University of North Carolina strongly indicated the need for such a study. The recommendations of the legislative study group were submitted to the 1977 General Assembly, analyzed and reviewed throughout the legislative process, and finally enacted into law. The three measures ratified by the General Assembly provided for the implementation of a system of land parcel identifier numbers, created a state land records management program to provide assistance to county officials, and established a programme to provide financial assistance to countries that desire to improve their land records, begininning with the preparation of base and cadastral maps.

79.058

Dobner, Horst K.; Mexico City. Cadastre and Property Tax Office. **Project for the modernization and updating of Mexico City's land data bank,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.115-120.

Abstract: Modern land registers were initiated in Mexico in 1881 and were carried out in urban areas throughout the country without any essential change until, in 1970, a project in the State of Mexico gave rise to a second generation of modern land registers. In the present paper it is intended to examine the efforts being carried out to modernize the land data bank of Mexico City. Objectives, policies, strategies and programmes of the project are outlined. The new land data bank shall contribute to improve life conditions in Mexico's largest city located in an urban area with a total of 15 million inhabitants.

79.059

Dougenik, James A.; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **ASPEX program summary description, Mapping software and cartographic data bases. Volume 2,** 0-89860-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.49-56.

Abstract: Details ASPEX, a computer programme for automated mapping which produces three-dimensional line drawings from numerical sample data. Lists the command available in ASPEX and provides a sample run of ASPEX.

Location: 17.

79.060

Douglas, David H.; University of Ottawa, Ottawa, ONT.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **PILLAR mapping program: Two common tasks of the thematic cartographer, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.57-62.

Abstract: Discusses data display in thematic maps and briefly describes the PILLAR programme for producing geographically-placed bar graph data on

maps.
Location: 17.

79.061
Dowling, M.J.; Electronics Research Laboratory, Adelaide, Australia. **Procedure for producing a terrain elevation grid from map contour data,** AD-A078 400/9, ERL-0085-TR,.
Abstract: A common method of representing the shape of the terrain, for use in various simulations or digital computer assisted studies, is to record the height of the terrain at regular intervals over a 2-dimensional grid and store this information in the computer. Manual interpolation of contour data from surveys maps, to obtain the data for the grid, is a laborious and error-prone process. This report describes an improved procedure for producing the terrain height grid. It involves a sonic digitizer to record a set of (X, Y) coordinates along the contour lines shown on the survey map. This information is stored in a disk file on a computer, and a two-stage cubic spline interpolation procedure is used to determine the terrain height at the intersection points of the nominated grid. The set of computer programs developed to implement the procedure with minimal storage requirements is described and listed.

79.062
Dueker, Kenneth J.; Ericksen, R.H.; University of Iowa. Institute of Urban and Regional Research. **Interactive digitizing and graphics: The University of Iowa Geography Graphics Laboratory,** (in: Geoprocessing, Vol.1, no.1) 1979, Apr. pp.71-83.
Abstract: Describes the DIGIT SERIES system for interactive graphics. Discusses file structures data generalization, and data referencing conversions as well as problems encountered with the system.
Location: 20.

79.063
Dueker, Kenneth J.; Portland State University. School of Urban Affairs. **Land resource information systems: A review of fifteen years experience,** (in: Geoprocessing, Vol.1, no.2) 1979, Dec. pp.105-128.
Abstract: Compares alternative methods of spatial data encoding and various levels of spatial and attribute resolution. Explores different approaches to land information systems and considers reasons for the observed diversity in approaches.
Location: 20.

79.064
Dungan, William, Jr.; Technology Service Corporation, Santa Monica, CA.. **Terrain and cloud computer image generation model,** (in: Computer graphics, a quarterly report of SIGGRAPH-ACM, Vol.13, no.2) (at: Sixth Annual Conference on Computer Graphics and Interactive Techniques, SIGGRAPH '79 Proceedings) 1979, Aug. pp.143-150.
Abstract: A method is presented that produces a realistic simulation of terrain using source data from the Defense Mapping Agency (DMA). Because terrain is large in extent it exhibits special problems including data base size and generation, masking priority, and shading. An array of height values can be created from the DMA terrain file. The height array indices are used to access the pixel shade from a registered, orthonormal texture array. The use of texture provides a simple way to add nonlinear shading for a realistic representation with flexible data base generation. The line-of-sight search is used to produce realistic clouds with spatially variable attenuation. The data structures of height and texture arrays are simple, easily generated, and make good use of storage resources. Resolving masking priority along the line of sight is a visible surface algorithm which has advantages over hidden surface algorithms. Realistic representations such as texture and atmospheric attenuation are used with some success.
Location: 16,28.

79.065

Dupree, Robert L.; Standard Oil Company. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Amoco Graphics System, Management's use of maps: Commercial and political applications. Volume 1**, 0-89866-010-6, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.13-18.

Abstract: Describes the development and capabilities of the mapping corporate data base of the Standard Oil Company.

Location: 17.

79.066

Dutton, Geoffrey H.; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **American graph fleeting, a computer-holograph map animation of United States population growth 1790-1970, Computer mapping in education, research and medicine. Volume 5**, 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.53-62.

Abstract: Describes a series of four-dimensional computer-generated maps of American population growth displayed on a cylindrical hologram. Discusses the production of the series in terms of data base developments, data display, and holography.

Location: 17.

79.067

Dutton, Geoffrey H.; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **DOT.MAP program summary and portfolio, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.63-73.

Abstract: Concerns the DOT.MAP programme for data display, describing the command language and the data file structures. Also includes many illustrations of the mapping symbology of which the programme is capable.

Location: 17.

79.068

Edson, Dean T.; Leverenz, Jon M.; Mullen, Roy; Morrison, Joel L.; Hufnagel, Fred; Greenup, Wilbur, ed.; **Economic requirements**, (at: Auto Cart III, Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.32-80.

Abstract: A transcript of a panel discussion concerning the economics of automated mapping in the private and public sectors in terms of costs related to data base development, speed of production, wages, hardware, and restrictions on spending.

Location: 01.

79.069

England. Ordnance Survey Review Committee. **Report of the Ordance Survey Review Committee**, (Her Majesty's Stationery Office) 1979, July.

Abstract: Considers and makes recommendations concerning the long term activities of the Ordnance Survey. Includes several chapters on the benefits of digital topographic data bases and digital mapping, and other technological advances in the Ordnance Survey.

Location: 01.

79.070

Epstein, Earl F.; University of Wisconsin. Institute for Environmental Studies. **Cost-of land records in Wisconsin**, (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.189-203.

Abstract: The report documents the costs of the citizens of Wisconsin to collect and maintain land records of the state during the fiscal year 1975-76 for all federal, state, regional and local governmental units which are responsible for producing, collecting and maintaining records about the land. Definitions are provided. The research procedure is briefly described. Problems with present systems are outlined and future strategies and recommendations are discussed.

79.071

Evans, Ian S.; Durham University. Department of Geography, England. **Statistical characterization of altitude matrices by computer. Report 6. An integrated system of terrain analysis and slope mapping. Final report 8 June 73 - 4 Sept 79,** D-A076 558/6,.

Abstract: A system is described which: (a) replaces existing sets of diverse terrain indices with a group of statistics for point-characteristics: (b) calculates all of these statistics in a single computer run from a single data set: and (c) utilizes available altitude matrix data. The procedures are applicable to Altitude matrix data at any grid mesh. From altitudes in each 3 x 3 submatrix, a quadratic surface is fitted and solved for its first and second horizontal and vertical derivatives at the central point. This yields the slope gradient, slope aspect, profile convexity, and plan convexity at every point in the original matrix, except for the peripheral rows and columns. These 'point' descriptors are presented as: (1) line-printer shaded maps: (2) histograms: (3) scatter plots of each pair: (4) matrix of pair-wise correlations, plus circular regressions on aspect, and several multiple regressions, and (5) summary (moment-based) statistics. In general, the five basic descriptors have little relation to each other, except that gradient is usually a quadratic function of altitude. A comparison is made with other approaches, such as spectral analysis and fractal modelling. The long-distance persistance properties of terrain mean that considerable extra variance at long wavelengths is usually incorporated when the study area is extended. Hence the auto correlation function varies with the length of series or size of area. Variance of derivatives are also affected, but means, skews, and kurtoses are not.

79.072

Falsitz, R.; Flinleib, M.; National Heart, Lung & Blood Institute, Bethesda, MD.. **Computer mapping at NHLBI (National Heart, Lung and Blood Institute),** (at: Proceedings of the 3rd Annual Symposium on Computer Applications on Medical Care) (Institute of Electrical Engineers) pp.833-835.

Abstract: County mortality rates for coronary heart disease (8th ICD codes 410-413) and cerebrovascular diseases (8th ICD codes 430-438) were calculated for 35-74 year old white males and white females for the period 1968-1971. (ICD: International Classification of Diseases.) Rates were age-adjusted to the 1960 U.S. population. Maps displaying counties by quartiles of mortality were created for the contiguous United States. In addition, data were also mapped for various demographic variables that might relate to cardiovascular mortality. Using these data bivariate maps which display quartiles of mortality against quartiles of demographic characteristics were created. These maps offer a method of displaying large amounts of data and may be used as an hypotheses generating mechanism. Advantages and disadvantages in using this technique are discussed.

79.073

Fishbine, Glenn M.; Joelson, Mitchell R.; Minnesota Crime Control Planning Board. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Display techniques facilitating research in metropolitan areas: Examples from a case study of the association between crime and its proximity to "on-sale" liquor establishments, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3,** 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1978 pp.63-78.

Abstract: Describes a study of the locational relationships between crime and liquor establishments with details of data acquisiton, system hardware and software, and data display and discusses results of the analysis, reactions to the

study, and potential compatibility of the software and analytic techniques with other systems.
Location: 17.

79.074

Foster, H.D.; Bos, J.; Terra Syst. Int., San Antonio, TX.. **Integrated geographic data-base technology**, (in: Photogrammetric engineering and remote sensing, Vol.45, no.6) 1979 pp.786.
Location: 05,09,10,14.

79.075

Fowler, Robert J.; Little, James J.; Simon Fraser University. Department of Geography, Burnaby, B.C.. **Automatic extraction of irregular network digital terrain models**, (in: Computer graphics, a quarterly report of SIGGRAPH-ACM, Vol.13, no.2) (at: Sixth Annual Conference on Computer Graphics and Interactive Techniques, SIGGRAPH '79 Proceedings) 1979, Aug. pp.199-207.

Abstract: For representation of terrain, an efficient alternative to dense grids is the Triangulated Irregular Network (TIN), which represents a surface as a set of non-overlapping continguous triangular facets, of irregular size and shape. A method is described for automatically extracting a TIN model from dense raster data. An initial approximation is constructed by automatically triangulating a set of feature points derived from the raster model. The method works by local incremental refinement of this model by the addition of new points until a uniform approximation of specified tolerance is obtained. Empirical results show that substantial savings in storage can be obtained.

Location: 16,28.

79.076

Franklin, William Randolph; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **PRISM-A prism plotting program, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.75-79.

Abstract: Describes PRISM, a programme for data display of geographically-placed graphical information with illustrations of the various user options for mapping symbology

Location: 17.

79.077

Friend, Anthony; University of Sussex. Science Policy Research Unit, U.K.. **Conceptual frameworks and a unified approach to environmental statistics**, (at: Invited Paper for the 42nd Session of the International Statistical Institute) 1979, May.

Abstract: Examines the need for a conceptual basis for environmental statistics and reviews two prototype frameworks. Also discusses the use of the framework to initiate a dialogue with social and physical scientists, the development of environmental indicators and, for strategic planning purposes in Third World countries.

Location: 01.

79.078

Gaudet, Roger; Smith, Wayne; Simmonds, Robert L.; Council of Maritime Premiers. Land Registration and Information Service. **Land ownership information**, (at: Land Information Institute Meeting - Demonstration of LRIS Program) pp.Various.

Abstract: Describes the LRIS Property Mapping Program including updating, parcel indexing and data base file structures. Also discusses the impact of greater accessibility of land ownership information.

Location: 01.

79.079

Gold, C.M.; Kilby, W.E.; University of Alberta, Edmonton, ALTA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Case study of coal resource evalution in the Canadian Rockies using digital terrain models, Computer mapping in natural resources and the environment. Volume 4,** 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.45-50.

Abstract: Considers a case study in coal resource evalution by computer modelling of the terrain using a topographic model and a geological structure model of the landscape. Describes how the modelling was done, and problems encountered.

Location: 17.

79.080

Goldberg, M.P.; Schmidt, Allan H.; Chrisman, Nicholas R.; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Integration and analysis of multiple geographic data bases: An application of ODYSSEY, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.81-97.

Abstract: Describes ODYSSEY'S polygon overlay and retrieval software with respect to data base development by overlaying three map types, file structures data retrievals, and user language. Provides examples to illustrate uses and capabilities of the system.

Location: 17.

79.081

Graves, Carol G.; Milask, Laurance J.; Council on Environmental Quality, Washington, D.C.. **Computer system and a data base for studies of health and the environment,** (at: Proceedings of the 3rd Annual Symposium on Computer Applications in Medical Care) (Institute of Electrical Engineers) 1979 pp.825-832.

Abstract: UPGRADE (a User-Prompted Graphic Data Evaluation software system) and CLIDE (a County Level Integrated Database for Epidemiology) are tools developed by the President's Council on Environmental Quality to facilitate the analysis of data, specifically the correlation of environmental and health data. The purpose of the data base is to bring together data from a wide variety of areas such as the environment, health, agriculture, and demography. The objective of the software is to provide the capabilities necesary for analyzing this information.

79.082

Greenup, Wilbur, ed.; **Auto Cart 3, Proceedings of the International Conference (Symposium) on Computer-assisted Cartography, San Francisco, CA. Jan. 16-20, 1978,** (American Congress on Surveying and Mapping) 1979.

Abstract: Presents an edited transcript of panel discussions on a wide range of aspects of automated mapping covering economics, data display, software, hardware, data manipulation and editing.

Location: 01.

79.083

Greulich, Gunther H.; Boston Survey Consultants Inc., MA.. **Location of title,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.29-42.

Abstract: Parcel identifiers, title information and history, coordinate systems, indexing and computer storage have repeatedly caught the attention of those individuals who have recognized the need for a better land record system. The problem of parcel boundaries or of location of title has been pushed into the background. Lawyers, planners and computer experts often assume that boundaries are well established and, therefore, pose no serious problem. Views of the title insurance industry and consequences of California's Proposition 13 as they relate to the cadastre are discussed. Surveyors know that legal descriptions of common boundaries are frequently in conflict with each other. The need to resolve these problems before a new land record system can function is emphasized. Suggestions of how this can be accomplished are made.

79.084

Guptill, Stephen C.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Digital cartographic data base for land use and land cover and associated maps, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.99-106.

Abstract: Discusses a digital mapping data base used by the USGS, with details concerning data sources, digitization, file structures, data manipulation and data display.

Location: 17.

79.085

Hallam, Cheryl A.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **USGS Geographic Information Retrieval and Analysis System: Overview,** (at: Proceedings and Mapping Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) 1979 pp.229-246.

Abstract: The U.S. Geological Survey is currently producing land use and land cover maps and associated overlays (e.g. political units) for the United States. These maps are being digitized, editied, and incorporated into a digital data base. To accomplish these tasks, the Geographic Information Retrieval and Analysis System (GIRAS) has been designed and developed. GIRAS is designed to accept digitizer input, provide comprehensive editing facilities, produce cartographic and statistical output, permit retrieval and analysis of data, and exercise data base management tasks. The editing and output procedures currently utilize an arc segment, polygon approach in a production mode. The system incorporates facilities for gridding the polygon data to make them compatible with grid-based data sources. The existence of both polygon and grid cell formats for the same data set permits a wide range of analytical techniques to be applied to the data by users on the Federal, regional, and State level.

79.086

Hammer, Larry N.; Frayer, W.E., ed.; Tennessee Valley Authority, Forest Management. **WRAP-a Woodland Resource Analysis Program,** (at: Forest resource inventories. Proceedings of a Workshop, Vol. 1) (Colorado State University. Department of Forest and Wood Sciences) 1979 pp.95-104.

Abstract: Discusses WRAP, a resource analysis system for forestry planning, and its data analysis capabilities. Includes illustrations of output.

Location: 10.

79.087

Hannah, Marsha Jo; Cowsert, John, ed.; Cameron, Lynn, ed.; NASA. Ames Research Center Institute for Advanced Computation. **Error detection and rectification in digital terrain models,** (at: Joint proceedings of the American Society of Photogrammetry and the American Congress on Surveying and Mapping 1979 Fall Meeting) (American Congress on Surveying and Mapping and American Society of Photogrammetry) 1979, Sept. pp.152-164.

Abstract: Discusses error detection and error correction of elevation errors and presents data handling algorithms to detect and correct mistakes in DTMS.

Location: 05.

79.088

Hanson, Mark G.; Lynch, Dennis; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Automated geocoding and display in map form of data survey, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.107-110.

Abstract: Discusses the data processing software developed at the Central Transportation Planning Staff (C.T.P.S.) for the analysis of origin-destination surveys and other spatial data. The system consists of two components, one for assigning geographic zone information (traffic zone, school district, police precinct, census tract) to data based on addresses (geocoding) and the other for using the geographic base file (GBF)/DIME file to provide source map information for producing computer-generated maps.

Location: 17.

79.089

Harbaugh, John W.; Stanford University. Department of Geology, Stanford, CA.. **Computer in geology: A forecast for the 1980's,** (at: Eighth GEOCHAUTAUQUA) (Syracuse University) 1979.

Abstract: Discusses the future impact of automation on geology in terms of simulation, graphic display, and data retrieval.

79.090

Harrison, Terry P.; Rauch, Eric W.; Frayer, W.E., ed.; Koppers Co. Inc., Norris, TN.. **Generalized forest inventory data processing system,** (at: Forest resource inventories. Proceedings of a Workshop, Vol. 1) (Colorado State University, Department of Forest and Wood Sciences) 1979 pp.437-444.

Abstract: Describes system development and current capabilities of a forestry resource information system.

Location: 10.

79.091

Harron, William J.; Bovay Eng. Inc. Albuquerque, N.M.. **Photogrammetry assists in real estate mapping & legal descriptions,** (at: Proceedings of the American Congress on Surveying and Mapping Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) 1979 pp.487-491.

Abstract: The paper describes a project that extended over 12 years, from 1966-1978. Although there were four distinctly different phases, this paper deals with only those two phases directly involved in property descriptions. Phase I of the project comprised the Real Estate Mapping of the Trinidad Reservoir Site: Phases II and III provided some data which was used in Phase IV, the preparation of Right of Way, documentation for a relocated railway alignment. Discussed are the operations in phases I and IV which comprised the recovery of cadastral monuments, control surveys, aerial photography, analytic aerotriangulation, stereo compilation, drafting, description writing, field investigation, orthophoto prepartation and final map sheet preparation.

79.092

Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Computer mapping in education, research and medicine. Volume 5,** 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979.

Abstract: A collection of papers concerned with automated mapping in education, research and medicine.

Location: 17.

79.093

Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Computer mapping in natural resources and the environment. Volume 4**, 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979.

Abstract: A collection of papers which considers the role of automated mapping in resource information systems. Covers such aspects as the use of remote sensing data, land capability studies, and digital terrain models.

Location: 17.

79.094

Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Management's use of maps: Commercial and political applications. Volume 1**, 0-89866-010-6, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979.

Abstract: A collection of papers concerning map use for management and political applications.

Location: 17.

79.095

Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979.

Abstract: A collection of papers which concers mapping software and includes articles on mapping data bases, data acquisition, information systems, geocoding and specific mapping software programmes.

Location: 17.

79.096

Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3**, 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979.

Abstract: A collection of papers which deals with regional and urban information systems with emphasis on various planning applications. Includes a section on cadastral systems.

Location: 17.

79.097

Hazony, Yehonathan; Princeton University, N.J.. **Interactive cartography: An analytical tool for management information systems**, 0097-8493, (in: Computer graphics, Vol.4, no.1) 1979 pp.63-75.

Abstract: An interactive time-sharing graphical system has been developed for applications in education, engineering design, and management information systems. Graphical processors have been integrated into a general purpose interactive computer system, providing for easy graphical input and output in a time-sharing mode. The present report discusses the capabilities of the interactive system for applications in which cartographical displays serve as tools for analysis and reporting. The interactiveness of the system permits the analyst and the policy decision maker to quickly explore alternative solutions.

79.098

Hazony, Yehonathan; Princeton University, N.J.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Interactive cartography for large scale management information systems, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.111-117.

Abstract: Discusses the capabilities of an interactive graphical system with details of case studies and emphasizes the use of graphical displays for data manipulation and data analysis in interactive systems.

Location: 17.

79.099

Herot, Christopher F.; Kramlich, David; Carling, Richard; Friedell, Mark; Farrell, Jerry; Computer Corporation of America. Cambridge, MA.. **Spatial Data Management System. Quarterly research and development technical report 1 Dec 78-28 Feb. 79,** AD-A068 451/4ST,.

Abstract: This fifth quarter of work on the design and implementation of a prototype Spatial Data Management System (SDMS) resulted in the addition of serveral new capabilities to the operational prototype. These capabilities provide: (1) a means of controlling the detail at which data is presented, and (2) additional flexibility in the appearance of graphical displays of symbolic data. In addition, a mechanism for maintaining the correspondence between symbolic and graphical forms of data was designed and will be implemented during the coming two quarters.

79.100

Hickok, Kenneth H.; Frayer, W.E., ed.; Pennsylvania. Department of Environmental Resources. Bureau of Forestry. **Computer system for Pennsylvania State forest management inventory**, (at: Forest resource inventories. Proceedings of a Workshop, Vol. 1) (Colorado State University. Department of Forest and Wood Sciences) 1979 pp.445-449.

Abstract: Concerns the use of forest inventories for resource management and discusses the design and development of a resource information system to process this data.

Location: 10.

79.101

Holmes, Harvard H.; White, Marvin S. Jr.; Fegeas, Robin G.; Grimes, Marv; Patterson, Tom; Greenup, Wilbur, ed.; **Data editing,** (at: Auto Cart. 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.437-479.

Abstract: Discusses several aspects of data editing, automated mapping theory related to editing in the DIME system, the editing procedures used by the USGS for automated mapping, the automated mapping system for Alamedo County, CA, and advantages and disadvantages of a small agency using automated mapping.

Location: 01.

79.102

Honea, Robert B.; Johnson, Paul; Oak Ridge National Laboratory, TN.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Computer mapping software and geographic data base development: Oak Ridge National Laboratory user experience, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.119-130.

Abstract: Presents ORNL's work in resource information systems and gives opinions, derived form ORNL's experiences, regarding user needs and system compatibility.

Location: 17.

79.103

Hornbeak, Carl (Lt.); Kansas City Police Department. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Utilization of computer graphics in police planning operations, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3,** 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.79-88.

Abstract: Provides a description of a computer system for police dispatch information with emphasis on the data display aspects of the system.

Location: 17.

79.104

House, Louis O.; McLaughlin, Carroll W.; Frayer, W.E., ed.; Great Northern Paper, Millinocket MN.. **Data bases as informants: An industrial forest example,** (at: Forest resource inventories. Proceedings of a Workshop, Vol. 2) (Colorado State University. Department of Forest and Wood Sciences) 1979 pp.1030-1037.

Abstract: Concerns WIPS a resource information system and its subsystems for data manipulation and analysis of forest inventory information.

Location: 10.

79.105

Hughes, Alan; Brock University. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **SYMAP as an aid to teaching thematic cartography, Computer mapping in education, research and medicine. Volume 5,** 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.63-75.

Abstract: Describes and evaluates the use made of computer graphics, specifically SYMAP, in teaching cartography to geography majors at Brock University. The theme of the course is 'the map as a medium of communication', with special reference to thematic maps, and aims, at identifying the key decisions which enter into the map-making process, examining their consequences, and discussing their implications for the map-maker and the map-user.

Location: 17.

79.106

Hunka, George W.; Damon, Stanley; RCA, Camden, N.J.. **Engineering evaluation of an aided-track digitizing cursor system,** (at: Proceedings of the American Congress on Survying and Mapping Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) 1979 pp.522-546.

Abstract: An aided-track cursor for digitizing cartographic materials was interfaced with a lineal input system, and engineering tests were conducted to determine achievable accuracies and improvements in digitizing efficiency over the present tracing methods. The aided-track cursor tolerates operator tracing errors, correcting them by counts generated from a linear photosensitive array incorporated into the cursor. Features being digitized are imaged onto the array, and encoder outputs are then modified by the array count prior to transfer onto a storage medium. This paper describes the concepts and test results of an aided-track cursor system in conjunction with related fundamental features of the lineal input system. It presents results obtained during the engineering phase of the development program. These results are presented as comparative error histograms for the aided-track versus normal station tracing modes of operation. Comparative output plots and digitizing times of representative cartographic features are also shown.

79.107

Hunt, Anne M.; **New ODYSSEY begun,** (in: Context, no.10) 1979, Spring pp.10-13.

Abstract: Describes ODYSSEY, software for the preparation and management of digital descriptions of geographic study areas, and discusses its capabilities in data manipulation, data display and analysis.

Location: 01.

79.108

International Geophysical Union. Commission on Geographical Data Sensing and Processing. **Directory of individuals in the field of geographical data handling,** (Canada. Department of Environment. Lands Directorate) 1979, June.

Abstract: Lists those currently working in geographical data handling.

79.109

Jacober, Robert P. Jr.; Ohio State University, Columbus. **Standardization and computerization of symbology for engineering scale maps,** (at: Proceedings of the American Congress on Surveying and Mapping Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) pp.1979.

Abstract: This paper is a report on the continuing research being done towards the development of a set of computer compatible map symbols that could be adopted as a national standard for the map symbology used on large scale engineering maps.

79.110

Gern, Michael; Lund University, Lund, Sweden. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Color Plotting System, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.=131-135.

Abstract: Describes the hardware and software of the Color Plotting System, which generates hard copy data display in full colour.

Location: 17.

79.111

Jeyapalan, K.; California State University, Fresno, CA.. **Numerical cadastral survey,** (in: Photogrammetric engineering and remote sensing, Vol.45, no.9) 1979, Sept. pp.1263-1279.

Abstract: A numerical photogrammetric method for determining the coordinates of section and quarter corners, relocating and restoring section corners and monuments, checking the establishment of a subdivision, and determining the coordinates of urban lots is described.

Location: 05,09,10,14,20,21,23,24,27,28,32,36.

79.112

Johnston, Donald R.; COMARC Design Systems, San Francisco, CA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Case study of a completed application using CRIS for forest management inventory, Computer mapping in natural resources and the environment. Volume 4,** 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.51-55.

Abstract: Discusses a demonstration project, recently completed for major West Coast forest products company, which uses the company's existing timber inventory to illustrate the use of a computer-aided inventory system for storing, retrieving, and updating spatial data in any combination of elements.

Location: 17.

79.113

Johnston, Lee P.; Loubal, Peter; Parrott, Robert; Frysztacki, Wes; San Diego Comprehensive Planning Organization. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **TRANES model: A tool for transit and facilities planning, Urban, regional and state applications. Plus a special section on cadastral systems. Volume** 3, 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.89-108.

Abstract: Concerns TRANES, a programme for interactive data display in public transportation allocation planning studies. Describes capabilities of TRANES with examples of applications.

Location: 17.

79.114

Johnston, William D.; Las Cruces, N.M.. **Computer generated maps. Part 1,** (in: Byte Publications Inc., Vol.1979, May,) pp.10-12, 76-101.

Abstract: Discusses the use of microcomputers for map production. Describes mapping data base development and structure, and software and hardware requirements. Emphasizes the potential for map projection changes using a computer.

Location: 01,20,33,37.

79.115

Johnston, William D.; Las Cruces, N.M.. **Computer generated maps. Part 2**, (in: Byte Publications Inc., Vol.1979, June,) 1979, June pp.100-114, 122-123.

Abstract: Presents a map projection programme for the generation of maps from any chosen perspective and provides pictorial illustrations of the programme's capabilities

Location: 01,20,33,37.

79.116

Kellie, Andrew C.; Virginia Polytechnical Institute & State University, Blacksburg. **Evaluation of field techniques for topographic mapping**, (at: Proceedings of the American Congress on Surveying and Mapping Annual Meeting, 39th) (American Congress on Surveying and Mapping) 1979 pp.471-485.

Abstract: The paper reports on a study to evaluate several different field techniques for topographic mapping. Results show that electronic distance measuring (EDM) equipment with tracking capabilities provided the faster field time on the two areas tested. Plane table mapping with a self reducing alidade, although slower than some of the EDM systems tested, was found to be faster than the use of transitstadia techniques. Map accuracy investigations using the field data obtained with each field technique showed no signficant difference in topographic maps produced by either EDM or conventional topographic mapping techniques. Comparisons of map production times did not show electronic data reduction and interactive computer drafting to be faster than conventional mapping procedures using a universal drafting machine and proportional diveders.

79.117

Khorram, Siamak; Smith, H. Gregory; University of California. **Topographic analysis of a wildland area based on digital terrain data**, (at: Proceedings of the American Congress on Surveying and Mapping Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) 1979 pp.284-299.

Abstract: The paper reports on a study to develop a procedure for the preparation of elevation, slope, and aspect maps for large areas based on digital elevation data. The procedure developed for elevation mapping included area boundary dilineation, control point selection, elevation interpolating, if necessary, and elevation classification into specified zones. For determining the scope and aspect maps, the normal vector for a pixel is computed by using the pixel's position relative to four pixels surrounding it in the four cardinal directions. This procedure has been applied to a watershed in northern California covering the Lake Davis and Frenchman Reservoir basins.

79.118

Knapp, Ellen M.; RIder, Deborah, NASA. GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Automated graphic information systems and LANDSAT data: A survey, Computer mapping in natural resources and the environment. Volume 4**, 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.57-68.

Abstract: Summarizes a study concerning automated GIS technology and remote sensing data and is organized in three parts: a general overview of automated GIS technology, the Landsat/GI interface, and the objectives, methodology, and interim results of the GIS software survey.

Location: 17.

79.119

Krapp, William B.; City of Detroit. Assessors Department. **Administrative problems in the implementation of the fiscal data portion of a multipurpose land data system,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.245-251.

Abstract: The joint venture of implementing a multipurpose land data system is fraught with problems, both technical and administrative. To insure a successful project it is very important that a good rapport be developed between participants and a cooperative and conciliatory atmosphere be achieved. The Assessing Officer has a very responsible role in the development of the multipurpose data system as he provides accurate and abundant information. However, a strong project manager and a competent staff member from each participating department are essential. If a national or international network of land data systems is to be developed, an acceptable uniform land coding system must be adopted which satisfies the needs of all participants.

79.120

LaBau, Vernon J.; Brink, Glen E.; Frayer, W.E., ed.; United States. Department of Agriculture. Forestry Service. **Use of FINSYS in developing and accessing the timber and wildlife data bases for the 1980 National Assessment,** (at: Forest resource inventories. Proceedings of a Workshop, Vol. 1) (Colorado State University. Department of Forest and Wood Sciences) 1979 pp.499-505.

Abstract: Deals with the use of FINSYS data editing and summarization programmes for resource inventories. Discusses data standardization, and data retrieval.

Location: 10.

79.121

Larimore, Philip B.; Louisiana State University. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Computer cartography as it is taught at Louisiana State University, Computer mapping in education, research and medicine. Volume 5,** 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.77-78.

Abstract: Describes the history of, the present (1979) courses in, and future plans for automated mapping education at Louisiana State University. Discusses mapping software used and the potential for more advanced educational applications.

Location: 17.

79.122

Lay, John C.; Fairfax County Government. Division of Mapping. **Impact of environmental data and some uses,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.227-230.

Abstract: Environmental data is collected on many subjects and in various forms. Problems exist in the way data is collected and the density level at which it should be collected. Some examples are given to show that environmental data does have legal precedence. An effort must be made to establish some control over the way data is collected, controlled and disseminated. Fairfax County has a wealth of environmental data which is used daily and there are codes which provide for its use and enforcement. For the past 15 years and more, the need to have environmental data readily on hand has become common place. These data systems will vary in the size according to the demands of the authority. Certainly the detail of the data will be geared to the economic impact on an area. Information is collected on such topics as soils, vegetation, topography, stream valleys and flood prone areas to name only a few. This information is used in the decision making process to allow development of the land or the use of its resources as its impact on the environment can be arrived at with some certainty. The legal problems involved in the implementation of a Multi-Purpose Land Data System are monumental, however, they are not insurmountable. The Environmental Data System is a file of the multitude of types of information concerning the classification land-use and resource data pertaining to the land parcels, which are pertinent to the regulation, conservation, use and development of the land and its resources. The file would be most detailed at the local government, where information is gathered at the parcel level, and more general in nature as the area involved progresses from the regional to the state and the national level.

79.123

Lemer, Andrew C.; Alan M. Voohees & Associates, Inc., McLean, VA.. **Suggestions on the functional requirements for an environmental data base,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.53-92.

Abstract: The environmental data base must be designed to address three related concerns: impact of development on its surroundings, impact of the surroundings on development, and requirements passed by laws and regulations. Ultimately, these concerns are related to what a decisionmaker must know to make effective decisions. Environment must be defined in a manner responsive to the type of development being considered. Input data must be made available at levels of geographic scale appropriate to the impact processes likely to be operative. Resultant analysis data must be displayed in a variety of forms to respond to concerns of particular interests in the community. Because environmental impact can increase sharply within a narrowly defined range of stimuli, a range which can vary among subsystems of environment, limiting values of environmental data are often difficult to find.

79.124

Lichtner, Werner; University of Hanover. Department of Topography and Cartography. **Computer-assisted process of cartographic generalization in topographic maps,** (in: Geoprocessing, Vol.1, no.2) 1979, Dec. pp.183-199.

Abstract: Describes an approach to line generalization including linear data encoding and data smoothing as well as displacement and generalization of buildings.

Location: 20.

79.125

Liggett, Robin S.; UCLA and William Jepson. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Use of CAMS (Computer Aided Mapping System) as a teaching tool, Computer mapping in education, research and medicine. Volume 5,** 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.91-94.

Abstract: Presents the specific features of CAMS, its classroom applications, and a variety of student projects which illustrate the use of the system

Location: 17.

79.126

Lowe, D.S.; Environmental Research Inst. of Michigan. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Use of LANDSAT in computer data bases, Computer mapping in natural resources and the environment. Volume 4,** 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.69-76.

Abstract: Describes three programmes for merging remote sensing data with other data sources in the data base, in order to improve land classification accuracy and maximize data usefulness.

Location: 17.

79.127

Lucas, Michel; **Interactive computer graphics: An overview. Report of the CODATA Task Group on Computer Use,** CODATA Bulletin 34, 1979, Nov..

Abstract: Presents an overview of the techniques which are associated with interactive computer graphics. Basic techniques as well as current developments are described in order to familiarize the reader with the necessary elementary information concerning this field. The coverage includes graphics hardware and software as well as applications at different levels of sophistication. A short bibliography indicates some interesting titles from the available literature.

79.128

Lund, H. Gyde; Frayer, W.E., ed.; United States. Department of the Interior. Bureau of Land Management. **Linking inventories,** (at: Forest resource inventories. Proceedings of a Workshop, Vol. 1) (Colorado State University. Department of Forest and Wood Sciences) 1979 pp.2-9.

Abstract: Considers data merging of different resource inventories, and examines the methods used, for linking inventories, and principles for designing integrated inventories.

Location: 10.

79.129

MacIntosh, Charles W.; Richard, Mike; Hunter, Daryl; Findeis, John H.; Roberts, Willis F.; Council of Maritime Premiers. Land Registration and Information Service. **Land titles system,** (at: Land Information Institute Meeting - Demonstration of LRIS Program) pp.Various.

Abstract: Considers the legal aspects of an automated cadastral system especially with respect to system design for the LRIS in the Maritimes.

Location: 01.

79.130

Marble, Duane F.; Tomlinson, Roger F., ed.; Phillips, Richard L.; Sibert, John L.; Fegeas, Robin G.; Greenup, Wilbur, ed.; **Data base management system approaches to handling cartographic data,** (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.180-218.

Abstract: A panel discussion which first discusses the problems in developing data base management systems designed specifically for retrieval and analysis of spatial data and recommends some possible solutions. Then discusses the development of a user language in the data base management system ADBMS, where the data description and data manipulation have already been specified, and describes the thematic maps produced by ADBMS in terms of the software and hardware used.

79.131

Marble, Duane F.; Gottschalk, Hans-Jorg; McEwen, Robert B.; Greenup, Wilbur, ed.; State University of New York at Buffalo. Department of Geography. **Data generalization and attribute code schemes,** (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.219-234.

Abstract: Concerns data generalization methods for lines and polygons especially those related to map scale changes and notes that programmed generalization is less time consuming than interactive generalization. Also considers topological editing, i.e. editing for spatially consistent data and briefly describes the attribute codes used by the USGS, a seven digit numeric code to describe the basic category of information as well as the unique line, area and node information.

Location: 01.

79.132

Marble, Duane F.; Reed, Carl; Cowen, David J.; Brassel, Kurt E.; Greenup, Wilbur, ed.; **Discovering and evaluating software,** (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.100-138.

Abstract: A panel discussion which opens with a review of problems in the development of software in automated mapping related to overlapping programmes, poor documentation, and inaccessibility of relevant programmes and describes an IGU Inventory to overcome these problems. Also provides examples of how some agencies have attempted to evaluate software for their own use and deals with problems and future requirements in documentation, standards, algorithm efficiency, data structure and display quality.

Location: 01.

79.133

Marble, Duane F.; State University of New York at Buffalo. **Integrating cartographic and geographic information systems education,** (at: Proceedings of the American Congress on Surveying and Mapping Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) 1979 pp.493-499.

Abstract: The past decade and a half (1978) has seen the development of computerized systems for acquiring, storing, retrieving, analyzing and displaying spatial data. These geographic information systems require for their effective development professionals trained in both geography and computer science, since it has been clearly demonstrated that training in only one of these areas is not effective. A high level of integration can and must exist between training in computer cartography and geographic information systems since the two areas share a high degree of communality in both the system design and technical areas.

79.134

Marble, Duane F.; Pequet, Donna J.; Wherry, David B.; Friedman, S.Z.; DeZur, Robert S.; Greenup, Wilbur, ed.; **Raster-based approaches to manipulation of cartographic data,** (at: Auto Cart 3, Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.139-179.

Abstract: A panel discussion which initially compares raster format processing to vector format processing of mapping data in terms of speed of operation, economics, flexibility, and data volume capacity. Also describes IBIS, a raster-based approach for spatial data processing with two case studies (Illinois coal reserves description, Orlando, Florida urban growth mapping) which illustrate the processing capabilities and types of output possible. Then considers how data flows through the GIS of ESL Incorporated using raster processing techniques.

Location: 01.

79.135

Mark, David M.; University of Western Ontario, London, ONT.. **Phenomenon-based data-structuring and digital terrain modelling,** (in: Geoprocessing, Vol.1, no.1) 1979, Apr. pp.27-52.

Abstract: Considers data structures for terrain modelling used by different groups of specialists involved with terrain data. Concludes that grid structures are not appropriate for DTMs.

Location: 20.

79.136

Marsh, Paul E.; Chrisman, Nicholas R.; Massachusetts Executive Office of Educational Affairs. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Use of computer mapping in policy studies by state government, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3,** 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.109-118.

Abstract: Describes the use of automated data manipulation data analysis and

data display for Massachusetts state policy studies.
Location: 17.

79.137
Masry, Salem E.; Simmonds, Robert L.; University of New Brunswick. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Selection of an interactive system for the LRIS cadastre, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3**, 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.169-173.

Abstract: Describes the progress of land registration and information service and the type of information already available for the data bank. The characteristics of interactive system to be used in data collection, storage, and retrieval of particularly graphical information are then discussed.
Location: 17.

79.138
McClure, Joe P.; Frayer, W.E., ed.; United States. Department of Agriculture. Southeastern Experiment Station. **Multiresource inventories--A new concept for forest survey in the Southeast,** (at: Forest resource inventories. Proceedings of a Workshop, Vol. 1) (Colorado State University. Department of Forest and Wood Sciences) 1979 pp.23-28.

Abstract: Discusses some of the factors considered in designing a multiresource inventory with respect to data needs and data collection.
Location: 10.

79.139
McEntyre, John G.; Purdue University. **Legal problems in the implementation of a multipurpose land data system,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.231-233.

Abstract: This discussion relates to the papers, "The Role of the Legislature in the Modernization of North Carolina's Land Records Information System" (Judson D. DeRamus , Jr.: "Legal Problems in the Implementation of Multipurpose Land Based Fiscal Data System" (Neal G. Trasente), and "The Impact of Environmental Data and Some Uses" (John C. Lay). It broadly classifies the problems involved in the implementation of a multipurpose land data system into legal and human. The action concept is presented that state laws related to land data systems to be employed at the local government area must be mandatory, that is, require the local government agency to utilize a prescribed, but flexible, state system and that there must be at least matching funds provided by the state to implement the system locally. The importance and problems of including environmental factors in a land data system is discussed especially as related to classifications which might lower the value or change the allowable uses of a parcel of land.

79.140
McEwen, Robert B.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. U.S. **Geological Survey digital cartographic data acquisition, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/19879 Mapping Collection), (Harvard University) 1979 pp.136-142.

Abstract: Describes the Digital Cartographic Application Program (DCAP) for the development of a digital mapping data base with details concerning the hardware and software, data file structures, data base management, and gives examples of pilot projects in data base development.
Location: 17.

79.141

McGill, Robert; Bell Laboratories. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Case study of computer mapping techniques relating to demographic studies at Bell Laboratories, Management's use of maps: Commercial and political applications. Volume 1,** 0-89866-010-6, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.21-30.

Abstract: Discusses inputting demographic information from the U.S. Bureau of the Census to selected areas whose boundaries relate to telephone exchanges. These boundaries are normally available only on maps which do not show Census tracts. A procedure for reconciling the two sources of data has been obtained using commercially available software. Methods, problems, and results are discussed.

Location: 17.

79.142

McQuillan, A.K.; Strome, W.M.; Canada Centre for Remote Sensing, Ottawa, Ont.. **Regional resource information systems,** (at: Third Conference on the Economics of Remote Sensing Information System).

Abstract: Examines issues in the development and use of an integrated, but decentralized regional resource information system. The system will involve a network of data bases and information extraction facilities to satisfy requirements at regional and local levels. Among the factors influencing development of such systems are: user needs, international plans for each observation satellites, data management and processing performance and cost improvements including developments in image processing and data integration, and developments which facilitate advances in distributed information systems. Emphasizes the strong interrelationships between data collection, model development and utilization, data management and information extraction, and the dependence of remote sensing benefits on the total system.

Location: 01.

79.143

Meade, Colleen; Greater Vancouver Regional District. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **LUIS: An interactive graphics system used for data base management in a regional planning environment, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3,** 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.119-125.

Abstract: Discusses LUIS, a data base management system for geographic information, describing its file structures, command user language system compatibility, applications of LUIS and a sample run.

Location: 17.

79.144

Meiszer, Nicholas M.; Chesterfield County, VA.. **Technical problems in the implementation of a multi-purpose land data system: The Fiscal Data System,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.43-51.

Abstract: The development of comprehensive land data systems are more important now than ever before. It is the responsibility of each local government official to stress this importance so that the work can begin. A plea should be made for standardization wherever possible. The parcel should be the base of any land data system and state plain coordinates should be the key identifiers. User involvement is important throughout the process. Beginning with the fiscal data system, early paybacks can be realized. This will help gain the acceptance and support of the public and elected officials to further the development into other areas. Finally, let the work begin now, here.

79.145

Mersch, Jerome B.; Roex, Herschel W.; UNITED STATES. ENVIRONMENTAL PROTECTION AGENCY. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Case study of a thematic map application for air pollution analysis, Computer mapping in natural resources and the environment. Volume 4,** 0-89866-103-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.77-82.

Abstract: Describes the development of the Colour Shading Program (CSP) used to plot colour-coded county maps in conjunction with a modified DIMECO file (for plotting county boundaries).

Location: 17.

79.146

Meusburger, Peter; Fasching, Gerhard; Schanegger, Josef; University of Innsbruck. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **THEMAP software specially programmed for smaller systems, Mapping software and cartographic data bases. Volume** 2, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.143-156.

Abstract: Describes THEMAP, software for producing thematic maps, in terms of data display capabilities and data needs, with details of the user language.

Location: 17.

79.147

Miller, Bob; Robertson, Bill; MacNaughton, Neil; Council of Maritime Premiers. Land Registration and Information Service. **Integrated survey area,** (at: Land Information Institute Meeting-Demonstration of LRIS Program) pp.Various.

Abstract: Deals with Phase I of the LRIS in the Maritimes which aims to provide an accurate reference system for all land-based information. Reviews the role of the surveyor in and integrated survey area discusses the survey network in the Maritimes.

Location: 01.

79.148

Miller, W. Frank; Carter, Bradley D.; Michigan State University, State College. **Rational land use decision-making: The Natchez State Park,** (in: Remote sensing of environment, Vol.8, no.1) 1979, Feb. pp.25-38.

Abstract: Mississippi State University undertook a remote sensing application project to assist the Mississippi Park Commission in Selecting a suitable site for a proposed state park in Adams County, Mississippi. High-altitude color infrared imagery of scale 1:120,000 was available, and these data, together with inputs from other sources such as topographic and geologic base maps, yielded the basic data for the construction of a computerized data base. A low altitude flight was made to obtain 1:24,000 color infrared imagery. These data in conjunction with map information were used to develop a data base for more intensive analysis and modeling.

Location: 05,10,20,27,28,32,33,36,37.

79.149

Mills, Robert F.; New Jersey, Division of State and Regional Planning. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Operational English dialogue system for state-wide integration of polygon and LANDSAT data, Computer mapping in natural resures and the environment. VOlume 4,** 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.83-89.

Abstract: Examines a project aimed at merging remote sensing data with other data source for data base development to produce several types of geographic base files for automated mapping and planning applications

Location: 17.

79.150

Morehouse, Scott; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Application of ODYSSEY to DIME file mapping, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.157-162.

Abstract: Describes the general format of the GBF/DIME file, the ODYSSEY chain and polygon files, and, finally, a step-by-step description of the ODYSSEY processes used to produce thematic maps from the DIME file

Location: 17.

79.151

Morehouse, Scott; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **POLYPS-A polygon mapping program, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collections), (Harvard University) 1979 pp.163-166.

Abstract: Discusses POLYPS, a programme for shading chloropleth maps, in terms of programme capabilities and availability to the public, and includes a sample terminal session with POLYPS.

Location: 17.

79.152

Morin, E.J.; Energy Resources Data System. **Energy Resources Data System: Basic system design,** (Energy Resources Data System) 1979, May.

Abstract: Describes Stage II which was initiated in January 1978 to establish the basic design or framework of the Energy Resources Data System. This report provides a detailed discussion of Stage II objectives, activities and recommendations.

Location: 01.

79.153

Mroczynski, R.P.; Purdue University. **Forest Resource Information System. Phase 3. Quarterly report on phase 3, 1 Apr. 30 June 79,** E80-10026, LARS-063079,.

79.154

Murphy, R.C.; Broughton, R.S.; Kok, R.; McGill University, Montreal, QUE.. **Computer-aided plotting of topographic survey data,** 0045-432X, (in: Canadian agricultural engineering, Vol.21, no.1) 1979, June pp.31-37.

Abstract: Anticipating the availability of computer-compatible electronic surveying-recording equipment, a flexible mapping system was designed and tested to assist in the organization of commercial-scale stadia surveys for farm drainage planning and the production of edited spot elevation maps. Data organization within the system is compatible with further drainage engineering activities, such as contouring and computer-aided drainage network design. The software of the system is described in some detail. During field trials in the summer of 1977, the total overall production cost was determined to be $15. 57/ha with handcoding simulating electronic recording. Use of electronic surveying equipment should reduce this figure by 30%. The overall processing time required to produce a 200-ha map is one man-day for the first draft and 3 one-half man-days for the complete edited version.

Location: 20,35.

79.155

Nagy, George; Wage, Sharad G.; University of Nebraska, Lincoln. **Approximation of polygonal maps by cellular maps,** 0001-0782, (in: Communications of the A.C.M., Vol.22, no.9) 1979, Sept. pp.518-525.

Abstract: The approximation of polygonal thematic maps by cellular maps, an important operation in geographical data processing, is analyzed. The data organization used for representing the polygonal maps is a widely used segment-based data structure, where class labels identify the regions bordering

each segment on either side. The approximation algorithm presented operates on such an organization, eliminating the need for the recognition of region boundaries. Each segment is examined only once. The versatility of the new organization is further illustrated by the outline of algorithms for area computation and point inclusion. The algorithm is applied to a set of soil maps converted to computer-readable form by means of a coordinate digitizer.
Location: 05,09,25,20,28,37.

79.156
Nagy, George; Wagle, Sharad; University of Nebraska, Lincoln. **Geographic data processing,** 0010-4892, (in: Computing surveys, Vol.11, no.2) 1979 pp.139-181.
Abstract: This survey attempts to provide a unified framework for the constituent elements of geographical data processing systems. External aspects of such systems, as perceived by potential users, are discussed with regard to extent, coordinate system and base map, range of applications, input/output mechanisms, computer configuration, command and interaction, documentation, and administration. The internal aspects, which would concern the system designer, are analyzed in terms of the type of spatial variables involved and of their interrelationship with respect to common operations. This point of view is shown to lead to a workable classification of two-dimensional geometric algorithms and data structures. To provide concrete examples, ten representative geographic data processing systems, ranging from automated cartography to interactive decision support, are described. Some comparisons are drawn between geographical data processing systems and their conventional business-oriented counterparts.

79.157
Nash, Thomas L.; University of Akron. **Coefficient of differential: a cartographic approach for land use planning analysis of environmental characteristics,** (at: Proceedings of the American Congress on Surveying and Mapping 39th Annual Meeting, 1979) (American Congress on Surveying and Mapping) 1979 pp.397-409.
Abstract: A common technique in land use planning is to plot on transparent map overlays a series of characteristics which affect the land's ability to accommodate development. These cartographic materials are combined to represent composite land capability factors, which, along with economic and social factors, are translated into recommended categories and intensities of land use. Many times a group of characteristics does not lend itself easily to classifying. This paper presents a mapping method which can be used with semantic differential classifications of land resources and their relationship to planning. Application of the model established the degree of spatial heterogeneity or complexity of various groupings of environmental variables.

79.158
Niemann, Bernard J. Jr.; McCarthy, Michael M.; University of Wisconsin, Madison, WI.. **Spatial data analysis and information communication, Planning the uses and management of land,** (ASA-CSSA-SSSA) 1979 pp.187-222.
Abstract: Explains the continuous and ongoing process of spatial data analysis and information communication by examining (i) the evolution and development of analysis and communication techniques (ii) the types of communication analysis users and (iii) examples and studies of analysis and communication techniques.
Location: 01.

79.159
Nisen, William G.; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Distribution and licensing of the Laboratory for Computer Graphics and Spatial Analysis software: An ODYSSEY case study, Computer mapping in education, research and medicine. Volume 5,** 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.99-102.

Abstract: Discusses licensing and distribution factors involved in marketing mapping software and mapping data bases, using the ODYSSEY license agreement as an example

Location: 17.

79.160

O'Connor, James F.; Hazeltine Corporation. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Computer map generation in an automatic vehicle monitoring system, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3,** 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.127-130.

Abstract: Describes the Hazeltine AVM system, shows how the system interfaces with the dispatcher, and presents the technique of map generation which is a key element in overall system effectiveness.

Location: 17.

79.161

Ogilvie, Mary; Council of Maritime Premiers. Land Registration and Information Service. **Land Registration and Information Service,** (at: Second Workshop on Cadastre Based Land Information Systems).

Abstract: Outlines the progress to date (1979) of the LRIS of the Maritimes in data referencing, land data bank development and land surveying.

Location: 01.

79.162

Olson, R.J.; Klopatek, J.M.; Emerson, C.J.; Oak Ridge National Laboratory, TN.. **Regional environmental Studies: Application of geoecology data base,** CONF-790739-1, (at: Harvard Computer Graphics Week '79).

Abstract: Regional studies examine the spatial, temporal, and functional characteristics of geographic areas whose size and boundary configuration often depend on the definition of a particular problem. Thus, reference may be made to ecological, urban, economic, political or abstract regions. To address environmental problems at the regional scale, the county-level Geoecology Data Base was developed. Using selected variables from existing data sources, a standardized digital data base was created for the conterminous United States. Over 1000 variables on file for county-subcounty units provide data on terrain, water resources, forestry, vegetation, wildlife, agriculture, land use, climate, air quality, population, and energy. The data base is described, and the utility of the county-level data base is illustrated with three examples. The Geoecology Data Base is utilized in conjunction with statistical analysis (SAS) and cartographic display (SYMAP, EZMAP, etc.) programs to both characterize regional environmental systems and to delineate possible environmental impacts. Much of the effort involved in creation and expansion of the Geoecology Data Base consists of obtaining and editing diverse inventory and monitoring files. An integral aspect of this activity is the promotion of data exchange through increased awareness of available data and development of more efficient exchange methods. The three examples involve regional environmental studies. First, future patterns of projected levels of SO sub 2 are overlaid on SO sub 2-sensitive agricultural crops and forest resources. Secondly, those areas of potential natural vegetation of the United States as modified or replaced by current land use are depicted. Finally, an ecological evaluation of potential wilderness areas using a number of county-subcounty ecological parameters is discussed.

79.163

Orr, Joel N.; Jerusalem Syst., Danbury, CT. **Prototype for automated regional land data systems,** (in: Photogrammetric engineering and remote sensing, Vol.45, no.6) 1979 pp.800.

Location: 05,09,10,14.

79.164

Orr, Joel N.; Orr Associates, Inc.. **Special report: Computer graphics. Product profile. Interactive computer graphics systems,** (in: Mini-Micro systems, Vol.1979, Dec.,) pp.68-78.

Abstract: Concerns interactive systems with minicomputer for graphics display. Discusses related hardware and software, and provides a checklist of system features for sugar selection and a list of system suppliers.

Location: 01.

79.165

Parsons, Tyler B.; Schultz, Robert J.; Benton City Public Works Office. Corvallis OR.. **Land data systems and county survey programs,** (at: Proceedings of the American Congress on Surveying and Mapping 39th Annual Meeting, 1979) (American Congress on Surveying and Mapping) 1979 pp.433-448.

Abstract: Implementation of a system to improve land records at the county level will require prior planning and execution of surveying and mapping programmes. These programmes should provide for the maintenance of corners in the Public Land System, if appropriate, and the adoption of more efficient means of survey information storage and retrieval through the use of computer indexing and microfilm. Adoption of a coordinate system based on the national geodetic network should be considered. Accurate large scale maps should be available for use in property identification, planning and resource evaluation. An evaluation is made of the Benton County, Oregon, surveyor's office requirements to support modernization of land records.

79.166

Patton, D.R.; USDA Forest Service. Rocky Mountain Forest and Range Experiment Station, Tempe, AZ.. **Run WILD II: A storage and retrieval system for wildlife data,** (at: Transactions of the 44th North American Wildlife and Natural Resources Conference) (Wildlife Management Institute) 1979, Oct..

Abstract: Discusses Run WILD II, a system which contains three levels of information-inventory, species habitat associations and management data. Serves the needs of field biologists and land use planners in Arizona and New Mexico.

Location: 17.

79.167

Peleg, Shmuel; Rosenfeld, Azriel; Maryland University College Park Computer Science Center. **Straight edge enhancement and mapping,** AD-A074 852/5, CSC-TR-694,.

Abstract: An interative reinforcement scheme is used to enhance straight portions of edges in a image and to obtain refined estimates of their slopes. This makes it much easier to detect significant straight edge segments in the image and thus map the image's straight edge content.

79.168

Pelz, Dieter R.; Thom, Richard H.; Frayer, W.E., ed.; University of Freiburg. **Integrated timber and wildlife habitat inventories,** (at: Forest resource inventories. Proceedings of a Workshop, Vol. 1) (Colorado State University. Department of Forest and Wood Sciences) 1979 pp.72-76.

Abstract: Describes the Illinois Multiple Resource Inventory System for timber and wildlife inventories.

Location: 10.

79.169

Penfold, Donald M.; Lane County, OR.. **Geographic Data System, Lane County, OR.,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.143-159.

Abstract: The Geographic Data System developing in Lane County, Oregon, provides information on which citizens, as well as public officials, can base rational decisions. The system consists of a collection of interrelated data and a variety of tools--hardware and software--for accessing the data. Access to the information is in either batch or interactive mode. Reports and large plots can be produced in batch while queries can be made through alphanumeric or graphic terminals. Continuing input to the system comes from the operational files of various local government agencies, coordinated by the Lane Council of Governments, and formalized in a Coorperative Project Agreement.

79.170

Peuquet, Donna J.; State University of New York at Buffalo. **Raster-mode algorithm for interactive modification of line drawing data**, 0146-664x, (in: Computer graphics and image processing, Vol.10, no.2) 1979, June pp.142-158.

Abstract: Geographic data files are characteristically very large, given the high degree of precision needed for most cartographic production and analysis applications. As the case of capturing large volumes of high-precision spatial data and the subsequent reliance on automated methods for handling such data increase, there is an increasing need for efficiency in terms of both storage space and speed. More and more graphic data are now being captured in raster instead of vector format. This means that raster methods for processing raster-formatted data need to be investigated as a means of increasing efficiency by avoiding the raster-vector-raster conversion process. Raster algorithms to perform a wide range of tasks already exist. One exception, however, is raster-mode update. This paper presents an algorithm for the modification of cartographic or any similar type of raster-formatted line drawing data which operates on rasters exclusively.

79.171

Polaris Project. Property Rights Division. Land Registration Management Committee. **Design concepts and recommendations. Vol. 2**, (series: Improved land registration system for Ontario), (Ontario. Ministry of Consumer and Commercial Relations) 1979, Aug..

Abstract: Discusses problems and issues in the current (1979) Ontario land registration system, examines the economics of the proposed cadastral system, and provides recommendations for implementation of this system.

Location: 01.

79.172

Polaris Project. Property Rights Division. Land Registration Management Committee. **Executive summary of the design concepts and recommendations. Vol. 1**, (series: Improved land registration system for Ontario), (Ontario. Ministry of Consumer and Commercial Relations) 1979, Aug..

Abstract: Describes the current (1979) cadastral system, defines user needs and data needs in an improved system and considers system alternatives. Discusses the government's proposed system in terms of recommendations of the committee.

Location: 01.

79.173

Potter, Meredith W.; Kessell, Stephen R.; Cathelino, Peter J.; Gradient Modeling, Inc. Missoula, MT.. **FORPLAN: A Forest Planning Language and Simulator**, (in: Environmental management, Vol.3, no.1) 1979, Jan. pp.59-72.

Abstract: A Forest Planning Language and Simulator (FORPLAN) has been developed to facilitate the use of simulation for integrating fire into the land management planning process. FORPLAN incorporates unique characteristics of previous systems, links numerous models and data bases, allows selection of variable resolution levels, and permits discrete time simulation of disturbances on plants, fuels, and animals.

Location: 05,20,36.

79.174

Powers, William T.; Northbrook IL.. **XYZ phenomenon: Stereoscopic plotting by computer,** (in: Byte Publications Inc., Vol.1979, Oct.,) pp.140-149.

Abstract: Describes the creation and viewing of stereo pairs and a program for their generation using an xy pen plotter.

Location: 01,20,33,37.

79.175

Roberts, M.C.; Randolph, J.C.; Chiesa, J.R.; Simon Fraser University. Department of Geography, Burnaby, B.C.. **Land suitability model for the evaluation of land-use change,** (in: Environmental Management, Vol.3, no.4) 1979, July pp.339-352.

Abstract: A land suitability model was developed to provide the planner with a quantitative tool for assessing the environmental limitations on proposed land-use changes in the area surrounding Lake Monroe in southern Indiana. The model incorporates a weighting procedure that allows the environmental evaluation of a decision to convert the present land use to another category. The data base for the model was assembled by a multidisciplinary team. A case study is included, which illustrates the advantages and limitations of the land suitability model as it is applied to the evaluation of a site for the Alumni Family Camp.

Location: 05,20,36.

79.176

Roberts, Willis F.; Council of Maritime Premiers. Land Registration and Information Service. **Assessment from a political point of view (for a panel discussion on land records and resource information system Washington),** 1979.

Abstract: Reviews the principles of land recordation and management in terms of government policy. Discusses interaction between groups within the government, the need for funding and for political acceptibility of changes in land recordation.

Location: 01,39.

79.177

Roberts, Willis F.; Council of Maritime Premiers. Land Registration and Information Service. **Land related information systems,** (at: Conference on Commonwealth Surveyors).

Abstract: Describes the progress of the LRIS in the Maritimes over the past six years (1973-1979) and considers future information system issues especially relating to resource information systems.

Location: 01.

79.178

Roberts, Willis F.; Land Registration and Information Service, Fredericton. **Report on Land Registration and Information Service, Maritime Provinces, Canada,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.97-113.

Abstract: The Land Registration and Information Service, and Agency in the Maritime Provinces of Canada, is responsible for implementing a four phase programme of: (1) surveying, (2) mapping, (3) modernization of land registration records, and (4) development of a land information system. This paper describes the organization's history, its objectives, and achievements to date. In addition, LRIS outlines its criteria for designing its information system, and for implementing it. A recent pilot project incorporating these ideas is described.

79.179

Robinson, J.E.; Syracuse University. Department of Geology, Syracuse N.Y.. **Computer map analysis in geology**, (at: Eighth GEOCHAUTAUQUA) (Syracuse University) 1979.

Abstract: Considers the use of computer-generated maps in geological analysis, especially petroleum exploration.

79.180

Sawayama, Gary; Castonguay, Rejean; Council of Maritime Premiers. Land Registration and Information Service. **Topographic mapping base**, (at: Land Information Institute Meeting - Demonstration of LRIS Program) pp.Various.

Abstract: Reviews the development of the mapping programme in the LRIS of the Maritimes for the production of topographical maps using orthophotography. Includes a section on the planned automated mapping system.

Location: 01.

79.181

Schlesinger, Jerry; Ripple, Bill; Loveland, Thomas R.; South Dakota. State Planning Bureau. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Land capability studies of the South Dakota Automated Geographic Information System, Computer mapping in natural resources and the environment. Volume 4**, 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.105-114.

Abstract: Examines the Spearfish Land Capability Study, a case study of the procedures, mapping software and hardware requirements, data display abilities, and problems encountered in land capability studies for planning applications using AGIS.

Location: 17.

79.182

Schmidt, Allan H.; **Future impacts of computer mapping**, (in: Context, no.10) 1979, Spring pp.16.

Abstract: Considers the importance of maps in communicating information and the need for public accessibility to data used in the governmental decision-making process.

Location: 01.

79.183

Schneider, Devon M.; Amanullah, Syed; **Computer-assisted land resources planning. Planning advisory service report**, 339, (American Planning Association) 1979, Jan..

Abstract: The creation and uses of computerized geographic information systems for land resources planning are reviewed. The planning applications of computerized geographic information systems, the process of choosing, developing, and operating a data base system, and the history and operation of some existing systems are discussed. Management issues that may result from implementation of the computerized system are outlined.

79.184

Schneider, Devon M.; **Using computers to make wise land use decisions**, (in: Planning-APA, Vol.45, no.5) 1979.

Abstract: Describes applications of geographic information systems in land use planning by regional agencies. Data manipulations possible include acreage calculations, composite mapping, polygon conversion to grids and polygon overlays, and tabular data generation. Computer programmes are useful for generating alternative solutions to planning problems. The conservative use of computers could open new possibilities for improving the planning process.

79.185

Schreier, H.; Lavkulich, L.M.; University of British Columbia, Vancouver, B.C.. **Numerical approach to terrain analysis for off-road trafficability**, (in: Photogrammetric engineering and remote sensing, Vol.45, no.5) 1979 pp.635-642.

Abstract: A numerical classification scheme is described in which terrain is quantified in miltiparameter terms using such varied data sources as remote sensing, photogrammetry, and ground survey information. The method is based on the use of a comprehensive quantitative data bank in which surficial geological units are described by a number of chosen properties. The importance of individual properties used in the classification is examined via factor analysis, and the degree of similarity between units is determined by a hierarchical, average distance, clustering procedure. Digital terrain models and different sets of parameters can be emphasized according to need. An assessment of dynamic seasonal conditions is therefore possible, thus improving accuracy and ease of quantifying terrain conditions, which is of particular importance in trafficability studies.

Location: 05,09,10,14,20,21,23,24,27,28,32,36.

79.186

Science Applications, Inc., Golden, CO.. **Development and application of a Permit Information System for Shale Oil (PERMISSO). Final report, June 1978 - May 1979**, DOE/ET/83764-1,.

Abstract: This report covers the first phase of a programme to develop an information system capable of describing and assessing the federal, state, and county permitting process for oil shale development. It was found that the permitting system is in a constant state of change and is growing in complexity. There are potential direct savings of several millions of dollars in the development and use of an automated permitting system data base.

79.187

Seymour, Gayle A.; Marshall, Rodney S.; University of Akron. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **PLOTALL: Software development and marketing in a university environment, Computer mapping in education, research and medicine. Volume 5**, 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.95-97.

Abstract: Addresses three areas of interest to the potential software developer: touches on the question of software development in an academic environment, discusses some of the problems encountered in the marketing, distribution and support of a software package (PLOTALL) from this environment, lists considerations which may be useful to academic institutions interested in marketing a package for the first time.

Location: 17.

79.188

Sheehan, David E.; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Discussion of the SYMAP program, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.167-179.

Abstract: Reviews the history of SYMAP, a program for the display of spatial data, and discusses the program's capabilities and limitations, with illustrations of data display capabilities.

Location: 17.

79.189

Sibert, John L.; Los Alamos Scientific Laboratory, Los Alamos NM. **Studies of offshore petroleum leases using a cartographic data base system**, LA-UR-79-1817, CONF-790739-3, (at: Harvard Computer Graphics Week '79).

Abstract: An innovative system combining techniques of computer graphics and data base management has been developed at the Los Alamos Scientific Laboratory for the United States Geological Survey (USGS). The system is based on a CODASYL-type network data base management system. An interactive query language has been developed to allow standard data base retrievals as well as cartographic display of retrieval results. Map displays include both real-time display on a CRT terminal (such as a Tektronix 4014) and postprocessed full-color display on computer output microfilm. Since the system became operational early in 1978, it has been used in a number of ongoing studies for both the USGS and the Department of Energy (DOE). The primary application to date has been verification of the Lease, Production, and Revenue data (LPR) amassed by the USGS as part of its regulatory responsibility. Over 150 color-coded maps of offshore areas in the Gulf of Mexico have been produced for comparison with hand-drawn originals. This has proved to be an effective verification procedure, because differences between the maps are readily visible. Other current applications include provisions of both data and displays for statistical studies of bidding behavior of oil companies for both USGS and DOE projects.

79.190

Simon, David F.; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Introduction to IMGRID, and information manipulation system for grid cell data structures, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.180-194.

Abstract: Discusses IMGRID, mapping software designed for easy data access for manipulation and analysis of mapped data in environmental information systems. Describes IMGRID file structures, user language, data base, and provides examples of analytical procedures.

Location: 17.

79.191

Smith, R.A.; Blachut, T.J., Ed.; Chrzanowski, Adam; Saastamoinen, J.; **Urban surveying and mapping,** 0-387-90344-5, (series: Principles of surveying and mapping data banks in cities), (Springer-Verlag) 1979 pp.359-364.

Abstract: Discusses issues in mapping data base development such as data sharing, geocoding, and economics.

Location: 01,06.

79.192

Spann, G.W.; Hooper, N.J.; Faust, N.L.; Paludan, C.T.N.; **Low-cost digital processing system for land data,** (at: Thirteenth International Symposium on Remote Sensing of Environment) 1979.

79.193

Sprague, Percival Tom; Wisconsin Power and Light Company, Madison. **Real-estate interests of a Wisconsin utility,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.239-243.

Abstract: The real estate interests of a Wisconsin utility are many and varied. There is a continual need of acquisition, definition, patrol and defense of these interests. All interests are subject to encroachment, but more especially the easement interests. Many of the interest problems are the result of poor land surveying, less than adequate title interests, and failure to comply with certain rules and regulations.

79.194

Staff, Ilene; Holloway, Rick; City of Kansas. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Use of computer graphics in community development planning and management, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3,** 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.131-139.

Abstract: Discusses the Kansas City Community Development program which uses automated mapping data display for monitoring and analysis of social service activities. Discusses why automated mapping was desired and how the maps are produced.

Location: 17.

79.195

Strome, W.M.; Morley, L.W.; Goodenough, D.G.; Cihlar, Josef; McQuillan, A.K.; Canada Centre for Remote Sensing, Ottawa, ONT.. **Integrated resource information system,** (at: Canadian-Ontario Joint Forestry Research Committee).

Abstract: Discusses the need for up-to-date resource data and outlines the requirements of resource information systems, emphasizing the need for system sharing and data sharing.

Location: 01.

79.196

Sutterlin, P.G.; Canada. Dept. of Energy, Mines and Resources. Centre for Mineral and Energy Technology, Ottawa, ONT.. **Future of information systems,** (at: Eighth GEOCHAUTAUQUA) (Syracuse University) 1979.

Abstract: Discusses the impact of automation on geological data collection, storage and retrieval.

79.197

Svatos, Vern C.; New Castle County, Delaware. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Case study of the analysis of the capability of undeveloped lands to contribute to water quality degradation, Computer mapping in natural resources and the environment. Volume 4,** 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.115-133.

Abstract: Presents a case study of evaluation of land capability factors for water quality management and other planning applications. Describes the hardware and software of the system, the data display, and the results of the analysis.

Location: 17.

79.198

Thallon, K.P.; Frayer, W.E., ed.; England. Forestry Research Station. Forestry Commission. **Uses of a stand data base for forest management,** (at: Forest resource inventories. Proceedings of a Workshop, Vol. 2) (Colorado State University. Department of Forest and Wood Sciences) 1979 pp.506-513.

Abstract: Concerns the Forestry Commission data base for forestry yield forecast and control. Describes inputs, outputs, updating, and costs.

Location: 10.

79.199

Tobler, W.R.; Andrews, Harry; Youngmann, Carl E.; Greenup, Wilbur, ed.; University of California at Santa Barbara, Santa Barbara, CA.. **Cartographic display requirements,** (at: Auto Cart 3. Proceedings of the International Conference on Computer-Assisted Cartography) (American Congress on Surveying and Mapping) 1979 pp.81-99.

Abstract: Provides details concerning the capabilities of an image processing system in terms of image transformations possible and interactive features. Also discusses what factors should be considered when selecting an appropriate automated mapping system by determining what work is to be done as well as requirements as to response speed, accuracy, data capacity, etc.

Location: 01.

79.200

Tom, Henry; United States. Bureau of the Census. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Review of Selected Census digital cartographic files available from the U.S. Bureau of the Census, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.195-200.

Abstract: Examines three United States Bureau of the Census digital cartographic files by describing their uses of the Bureau and by indicating how the content/structure of each file influences its possible applications by users. The files selected for discussion are representative of three digital cartographic structures, namely: point, polygon, and line segment. In order to provide a context for comprehending current and potential uses of these files, and begins with some general comments concerning Census digital cartographic files.

Location: 17.

79.201

Tomlin, C. Dana; Berry, Joseph K.; Yale University, New Haven, CT.. **Mathematical structure for cartographic modeling in environmental analysis**, (at: Proceedings of the American Congress on Surveying and Mapping Annual Meeting, 39th, 1979) (American Congress on Surveying and Mapping) 1979 pp.269-283.

Abstract: Analytic procedures common to most computer-oriented geographic information systems are composed of fundamental map processing operations. This paper develops the typology of these procedures and describes a set of operations common to a broad range of higher level techniques in environmental analysis. By organizing these primitive operations, the basis for a generalized cartographic modeling language is suggested which accommodates a variety of analytic procedures in a common, flexibie and intuitive manner. None of the procedures identified are application-specific. The use of each is limited only by the general thematic and spatial nature of the data to which it is applied. Among the major classes of primitive operations identified are those associated with reclassifying map catagories, overlaying maps measuring cartographic distance and characterizing cartographic neighborhoods.

79.202

Trasente, Neal G.; Scott, Harold; Arizona. Department of Revenue. **Legal problems in the implementation of a multipurpose land based fiscal data system**, (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.213-226.

Abstract: The four principal legal problems associated with constructing a land based fiscal data system are: 1. Confidentiality, 2. Disclosure, 3. Use of information, and 4. Legal authority to collect, edit and maintain information. The problems of confidentiality and disclosure negates construction of broadly conceived land based fiscal data systems for small geographic areas. Also, these two legal constraints force all front end development work on a land based fiscal data system to be done by revenue agency staff. Development work by agency staff may slow down the construction of a land based fiscal data system somewhat. The potential requirement for an agency official to scrutinize possible uses of land based fiscal information by requestors will also slow the construction of a fiscal data system. Finally, there are very significant problems associated with delineating the scope of legal authority to require local elected officials to generate fiscal data in a manner specified by a state agency. A revenue agency must be judicious in request and demands on local officials in order to minimize legislative confrontations. Avoiding direct, open legal confrontations with other parties responsible for generating fiscal data lengthens the development period for a fiscal data system substantially.

79.203

Turner, Scott; Moellering, Harold; Ohio State University, Columbus. **ICMS: An interactive choropleth mapping system,** (at: Proceedings of the American Congress on Surveying and Mapping 39th Annual Meeting, 1979) (American Congress on Surveying and Mapping) 1979 pp.255-268.

Abstract: ICMS is an interactive choropleth mapping program designed for use in multiuser environment such as a university where base map information may have been digitized in several different data structures. The maps are drawn on a storage tube CRT face, using either the preliminary map design information, or parameters saved from an earlier map. The system allows interactive data maniuplation, five methods of choropleth class choice and two methods of shading level choice. The map may be drawn at any time during a session, and any parameter, such as screen design or class choice may be changed at will. When the map is finished, the parameters necessary for the recreation of that map may be saved, and the map may be plotted on a hard copy device at any size desired. As many maps as desired may be made at one session.

79.204

Usher, W.D.; Alberta Land Surveyors' Association. **History of the establishment of a degree course in Surveying Engineering,** (in: ALS (Alberta Land Surveyors) news, Vol.8, no.4) 1979, Fall pp.16-18.

Abstract: Discusses the development of a degree programme in Surveying Engineering at the University of Calgary.

Location: 01.

79.205

Wadsworth, William M.; Booz, Allen, and Hamilton Inc.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Integrated public mapping systems: A state-of-the-art approach, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3,** 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.174-182.

Abstract: Provides an overview of three automated public sector mapping programmes and discussed some of the major issues with respect to integrated land record systems. Each programme is described in terms of background, programme scope, operating environment, and some technological aspects. Compares the three programmes and discusses some of the major economic, operational, and legal issues presented by integrated mapping and land record systems.

Location: 17.

79.206

Walski, Thomas M.; Gibson, Anthony C.; United States. Army Engineer Waterways Experiment Station. Environmental Laboratory. Vicksburg, MS.. **Application of MAPS to the Salinas-Monterey Urban Study. Final report,** AD-A074 536/4, WES/EL-79-4,.

Abstract: The MAPS (Methodology for Areawide Planning Studies) computer programme developed at the U.S. Army Engineer Waterways Experiment Station (WES), was used to evaluate the engineering aspects of alternative water supply plans for the Salinas-Monterey Urban Study conducted by the U.S. Army Engineer District, San Francisco. Using MAPS, the WES study team identified feasible water supply plans, developed staging for required facilities, and calculated capital and operation and maintenance costs for these facilities. The two counties in the study area, Santa Cruz and Monterey, were faced with different water supply problems, which were addressed using slightly different techniques, presented in the following paragraphs. In Santa Cruz County (except for the lower Pajaro area), water supply problems consisted chiefly of providing municipal water from an integrated system of surface and groundwater sources. MAPS simulations were used to identify potential diversions and reservoir sites to meet future needs. Source development was staged through the year 2020. In Monterey County, irrigation represents the principal use of water, which is derived almost solely from wells. The U.S. Geological Survey developed a finite element groundwater model to identify the effect of different water use rates on the groundwater resources. From this study, six measures for storing and transporting water were identified.

79.207

Waters, Nigel; University of Calgary, Calgary, Alta.. **Plus system: Who needs it?,** (at: Sharing resources, sharing costs. Proceedings of the 7th Canadian Conference on Information Sciences) 1979 pp.254-267.

Abstract: Describes the PLUS system, and the use of the system to resolve an intractable problem within the author's own research. Concludes with suggestions for the future use of these computer programmes and for possible developments and improvements which might be made in the area of geographical information systems.

Location: 01.

79.208

Waugh, Thomas C.; University of Edinburgh. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **GIMMS-An overview, Mapping software and cartographic data bases. Volume 2,** 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.201-206.

Abstract: Concerns GIMMS. Mapping software for producing thematic maps. Describes its data display capabilities, mapping symbology, and user language and presents a sample run.

Location: 17.

79.209

Webb, R. Pat; Davis, Darryl W.; United States. Army Corps of Engineers. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Development and servicing of spatial data management techniques in the Corps of Engineers, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3,** 0-89866-012-2, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.141-149.

Abstract: Discusses the capabilities of a resource information system related to land use management studies. Describes data analysis, and planning applications and provides guidelines for software implementation and management.

Location: 17.

79.210

Weber, Wigand; Institut fur Angewandte Geodasie, Frankfurt am Main Germany. **Computer mapping and geographic information systems in Germany,** (in: Geoprocessing, Vol.1, no.1) 1979, Apr. pp.85-99.

Abstract: Presents a review of automated mapping and GIS in Germany, emphasizing recent trends. Discusses data encoding, GIS types, data display, and data manipulation.

Location: 20.

79.211

Wehde, Michael E.; Cowsert, John, ed.; Cameron, Lynn, ed.; South Dakota State University. Remote Sensing Institute. **Spatial quantification of Maps or images: Cell size or pixel size implications,** (at: Joint proceedings of the American Society of Photogrammetry and the American Congress on Surveying and Mapping 1979 Fall Meeting) (American Congress on Surveying and Mapping and American Society of Photogrammetry) 1979, Sept. pp.45-64.

Abstract: Concerns spatial accuracy of data points relating to the cell size.

Location: 05.

79.212

Welch, D.M., ed.; **Ecological land survey and the Canada Land Data System. Proceedings of a Workshop, Jan. 10 1979**, (Canada. Department of the Environment. Lands Directorate. Ecological Land Classification and Evaluation Division) 1979.

Abstract: Provides brief summaries of discussions related to technical issues in map production, data encoding, etc. for computer entry and use, with specific reference to the CLDS

Location: 07.

79.213

White, Denis; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **CALFORM, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.217-223.

Abstract: Covers the procedures and data needs necessary to produce conformant maps using CALFORM mapping software and describes data display capabilities.

Location: 17.

79.214

White, Denis; Harvard University, Cambridge, MA.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **ODYSSEY design structure, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.207-216.

Abstract: Describes ODYSSEY, a collection of mapping software modules for constructing and managing computer representations of geographic areas. Covers the current (1978) state of ODYSSEY its functional components, and data sources, and provides illustrations of data display

Location: 17.

79.215

White, Marvin S. Jr.; United States. Department of Commerce. Bureau of the Census. **State of land data systems technology**, (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.267-272.

Abstract: Land data industry has matured physically, emotionally and intellectually. This is evident in the existence of many land data systems and projects. There does remain some need for improvement, however, especially at the interface of technology with people. The most pressing need is for a greater intellectual depth and a more widespread understanding of the mathematical nature of maps and land data systems.

79.216

Wildgen, John K.; University of New Orleans. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Case study of the use of computer mapping evaluating election returns and relevant socio-economic factors, Computer mapping in education, research and medicine. Volume 5**, 0-89866-014-9, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.103-112.

Abstract: Examines a case study in the use of automated mapping as a tool for research and educational applications in political geography studies.

Location: 17.

79.217

Williams, Robert Lee; Yale University, NEW HAVEN, CT.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Machine mapping via postal ZIP code numbers, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.224-227.

Abstract: Considers the use of ZIP code numbers as geographic location

identifiers for data used in computer mapping
Location: 17.

79.218
Wilson, John; Lancaster, Charles; Texas Natural Resources Information System. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Texas Natural Resources Information System Geographic Information System, Computer mapping in natural resources and the environment. Volume 4**, 0-89866-013-0, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.135-138.

Abstract: Describes the Geographic Information System (GIS) which is being developed by the Texas Natural Resources Information System (TNRIS). The GIS is one of several areas of TNRIS involvement. Material on the history and operational capabilities of the TNRIS is included.

Location: 17.

79.219
Wilson, John P.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Map and chart information storage and retrieval**, (at: Proceedings of the American Congress on Surveying and Mapping 39th Annual Meeting, 1979) (American Congress on Surveying and Mapping) 1979 pp.390-396.

Abstract: The U.S. Geological Survey Map and Chart Information System (MCIS) was developed to store, retrieve and display information about domestic maps and charts. Information is gathered both from known digital data banks and from physically handling and encoding selected source material. Data elements include title, scale, area, producer, publication and survey dates, rectangular and irregular geographic area, inset information, grids, contour interval, projection, and microfilm storage location. Search criteria are interactively edited in a dialog between the user and the computer. The user may direct that his retrieved information be sequenced and printed in one of four report formats or be graphically displayed on a plotted index, tailored by the user as to size and projection.

79.220
Wilson, Paul M.; Association of Bay Area Governments, Berkeley, Ca.. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **BASIS: The Bay Area Spatial Information System, Urban, regional and state applications. Plus a special section on cadastral systems. Volume 3**, 0-89866-012-2, (series: Harvard Library of Computer Graphics/1974 Mapping Collection), =1979 A25-1=Harvard University pp.151-156.

Abstract: Describes data base development and data management techniques of BASIS, a GI for planning applications and provides examples of use of the BASIS data base.

Location: 17.

79.221
Wood, Peter M.; Benson, William H.; Lawrence Berkeley Laboratory. Harvard University. Laboratory for Computer Graphics and Spatial Analysis. **Computer mapping software at the Lawrence Berkeley Laboratory, Mapping software and cartographic data bases. Volume 2**, 0-89866-011-4, (series: Harvard Library of Computer Graphics/1979 Mapping Collection), (Harvard University) 1979 pp.228-236.

Abstract: Presents a set of four mapping software programmes for digitization, editing, data encoding and data display and gives examples of sample runs. Also lists LBL computer mapping projects from 1973 to 1979.

Location: 17.

79.222

Zareski, Gordon K.; DOE. **Oil and Gas Information System,** (at: SPE (Society of Petroleum Engineers) -AIME (Society of Mining Engineers) Symposium on Petroleum Economy and Evaluation, Proceedings) (AIME) 1979 pp.13-19.

Abstract: The Oil and Gas Information System had its origin in several recent laws and in the National Energy Plan of 1977. The OGIS is responsible for obtaining data needed to develop reliable estimates of reserves and resources, of crude oil, natural gas, and natural gas liquids for the United States. A description is presented of the survey plan along with a discussion of tabulation and publication plans, time schedule for data collection and tabulation, and uses of the collected information.

79.223

Ziemann, Hartmut; Canada. National Research Council. **Geographical referencing system,** (at: Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second MOLDS Conference) (North American Institute for Modernization of Land Data Systems) 1979 pp.253-261.

Abstract: Various aspects of a geographical referencing system providing an interface between geographically referenced data files are discussed. Basic system elements are divided into basic data elements and basic reference elements, and these elements and their use are outlined. Entity identification and location identification for spatial constructs are discussed next, placing emphasis on the use of legally defined land units, such as parcels, as basic reference areas. Finally geodetic, legal and topographic surveying are identified as major data collection operations.

79.224

Aerial photography and computer graphics speed exploration, (in: Coal mining and processing, Vol.16, no.2) 1979, Feb. pp.54-56.

Abstract: Combining aerial photography, photogrammetry and computer programming, two subsidiaries of the Michael Baker Corp. have developed coal exploration techniques that cost about half as much as conventional methods. The techniques outlined here not only are more cost-efficient, but also more accurate and faster than conventional methods.

Location: 02,10,33.

79.225

Forestry research with PRISM maps, (in: Context, no.10) 1979, Spring pp.4.

Abstract: Illustrates an application of PRISM for mapping commercial forest land.

Location: 01.

79.226

Land data systems now. Implementation of a modern multipurpose land data system. Proceedings of the Second Molds Conference, Washington, D.C. 5-7 Oct., 1978, (North American Institute for Modernization of Land Data Systems) 1979.

Abstract: Contains papers that explore the means of establishing a series of interactive systems based on juridical data, fiscal data, environmental data and geographic data for the purpose of providing more readily all the data required for government, regulation, conservation, proper development and utilization of land and its resources.

79.227

Land Information Institute Meeting. Fredericton, N.B. June, 1, 1979,.

Abstract: A collection of papers concerning the three phases of the LRIS in the Maritimes.

Location: 01.

79.228

TOPAZ/NETWORK allocation model: Getting from place to place with ease and economy, (in: Context, no.10) 1979, Spring pp.2.

Abstract: Briefly describes a programme for modelling urban and planning systems that are network-based.

Location: 01.

79.229

Two program packages from the U.K.: GIMMS and MDS(X), (in: Context, no.10) 1979, Spring pp.3.

Abstract: Describes GIMMS, a user-oriented geoprocessing system especially for thematic map display, and MDS(X), a library of programmes of multidimensional scaling routines.

Location: 01.

79.230

Western report: Forest management. Automation improves methods of forest management and inventory, (in: Computer Data,) 1979, Oct. pp.30-31.

Abstract: Describes the interactive graphics design system used by the British Columbia government for forest inventories and forest management.

Location: 01, 02, 03, 19, 20, 24.

1980
CITATIONS

CITATIONS

80.001

Aangeenbrug, Robert T.; Chicago Aerial Survey, Silver Spring, MD.. **Map reading: An interactive approach,** (at: Harvard Computer Graphics Week 1980).

Abstract: Discusses the Map Information Facility (MIF) which has been established by the Federal Insurance Administration (FIA), a component of the Federal Emergency Management Agency (FEMA), to provide fast, accurate, and courteous response to telephone or TWX inquiries concerning special flood areas and National Flood Insurance Program (NFIP) rating factors. In the vast majority of cases, the MIF will serve as a substitute for the paper maps that are currently used in making determinations on the flood plains.

Location: 17.

80.002

Alberta Land Surveyors' Association. **Standardization of base mapping: Brief to the Interdepartment Committee on Surveying and Mapping, Province of Alberta.,** (in: ALS News, Vol.IX, no.1) 1980, Winter pp.12-13.

Abstract: Examines the need for a standard geographic referencing system in Alberta, and coordination of provincial and federal mapping programmes to permit exchange of data. Considers the need for urban mapping. Discusses the advantages of GIS for the dissemination and transfer of land data and recommends the development of single Alberta government agency to create, store and generate land information.

Location: 01.

80.003

Allam, Mosaad; Canada. Department of Energy, Mines and Resources. **Digital topographic map production**, 126-50, 318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.44.

Abstract: Reviews the work that has been done to computerize map production in Topographic Surveys. Describes the data collection by the Gestalt GPM II and the M & S editing systems, and shows the way in which the massive task of mapping Canada has been organized.

Location: 01.

80.004

Andersson, June; Sweden. Central Board for Real Estate Data. **Swedish land information systems,** (in: Canadian surveyor, Vol.34, no.1) (at: FIG International Symposium on Modern Technology for Cadastre and Land Information Systems) 1980, Mar. pp.14-20.

Abstract: Briefly outlines a number of land information systems in Sweden and then describes the Land Data Bank System and its updating process.

Location: 01.

80.005

Arnold, Gerry; Canada, National Defence Headquarters, Ottawa. **Development of DTM techniques**, 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.11-15.

Abstract: Focuses on the emergence of a Digital Terrain Model as an extension of convential topographic and thematic mapping practices.

Location: 01.

80.006

Barton, Samuel G. III; Claritas Corporation, Rosslyn, VA.. **Techniques for data analysis and computer mapping of sales potential by 5 digit zip codes,** (at: Harvard Computer Graphics Week 1980).

Abstract: Provides background on PRIZM's (Potential Product Rating Index by ZIP Markets) development and demonstrates how computer graphics figures into the products and services of the Claritas Corporation.

Location: 17.

80.007

Bathke, William L.; CALCOMP. **Engineering view of CAMRAS**, 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.233-244.

Abstract: Describes the overall programme with particular emphasis on the engineering aspects and applications. Discusses the critical matter of incorporation into the programme data base precise and complete information as to the location, depth, and size of all underground utilities, including sanitary and storm sewer, water supply, gas, electric, and telephone. Current engineering applications in the use of the system for design, location, construction and maintenance is also described.

Location: 01.

80.008

Bauer, Kurt W.; **Spatial control: A necessary base for a modern land information system**, (at: Land records systems can should be modernized. Selected papers from American Institute of Planners 60th Anniversary Conference) (University of Wisconsin-Madison) 1980, Mar. pp.53-59.

Abstract: Suggests a geometric framework as the basis for an improved land records land records system and discusses the benefits for various forms of planning.

Location: 01.

80.009

Berger, A.W.; Economic Information Systems, Inc.. **EIS Establishment/Company Data file and its computer graphic application**, (at: Harvard Computer Graphics Week 1980).

Abstract: Economic Information Systems, Inc. (EIS) was founded in 1969. Its birth was a result of the belief that a vehicle was needed to enable both commercial and governmental organizations to analyze who produced what, where, and in what amount, and who used what, where, and in what amount. The primary vehicle that was developed to fulfill this need was the EIS Establishment/Company Datafile. This Datafile covers all establishments in the United States with twenty plus (20+1) employment or $500,000 in sales The table below indicates the coverage of the Datafile.

Location: 17.

80.010

Berry, Joseph K.; Brown, Perry J.; Yale University. School of Forestry and Environmental Studies. **Cartographic model for assessing outdoor recreation opportunity**, (at: Harvard Computer Graphics Week 1980, Cambridge MA.).

Abstract: Describes a computer-assisted cartographic model of the assessment of outdoor recreation opportunity. The model was developed with three specific objectives in mind: to develop a preliminary cartographic model for assessing outdoor recreation opportunity, to evaluate the proposed model using a constrained hypothetical data set, and, to identify the advantages and limitations of the proposed model. The model is currently undergoing revisions and extensions and is being field evaluated this summer.

Location: 17.

80.011

Bricker, Cal D.; Alberta Remote Sensing Center. **Alberta Remote Sensing Center's role in education**, 0196-6758, (at: Technical papers of the American Society of Photogrammetry ACSM-ASP Convention) (American Society of Photogrammetry) 1980 pp.127-130.

Abstract: The Alberta Remote Sensing Center of Alberta Environment was established in 1974 to enhance Alberta ability to use remote sensing for the survey and management of Alberta's natural resources. Education in remote sensing is an important role of the Center. It actively promotes education and professional development in remote sensing through participation in international and national symposia, courses, workshops and lectures. A series of remote sensing courses - the only one of its kind in Canada are conducted annually. Lectures for this one week course are provided by the foremost remote sensing scientists from across Canada and the United States. The Center also co-sponsors and activelty supports educational activities of other agencies. Many universities, colleges, technical schools, high schools and elementary schools tour the facility. Staff lectures are incorporated into various course curricula. It is evident from our experience that the majority of participants - mostly employed in resource fields with limited facilities - are interested in practical techniques and applications. They are discouraged by theory, prognostications, and the advocated exclusive use of expensive and sophisticated systems. Remote sensing must be an improvement and cost effective to conventional methods. The need is for more continuing education and professional development in remote sensing, but the emphasis should be on the practical acquisition, application and analysis of remotely sensed data.

Location: 40.

80.012

Brooks, Kristina M.; Oregon State University. Geography Department. **Requirements for a statewide geographic information system: A survey of agency data and analytical needs,** 1980, Jan..

Abstract: Documents the results of a seven month survey of user needs for a multiagency geographic information system within the State of Oregon. The survey was designed to: 1. Compare the types and characteristics of geographically related data used or produced in program activities, 2. Identify potential direct and indirect users of a GIS, and 3. Delineate the data processing functions (manual or automated) required or desired, which could be provided by a GIS.

Location: 01.

80.013

Burkhart, B.R.; University of California. Computer Science and Applied Mathematics Department. **Cartographic base files at Lawrence Berkeley Laboratory: 1979 inventory,** (at: Harvard Computer Graphics Week 1980).

Abstract: An updated version of the 1978 inventory of cartographic map files at LBL for the display portion of their Socio-Economic-Environmental--Demographic Information System (SEEDIS) thematic mapping programme CARTE. The map file descriptions include a contact person, abstract, original data source availability, record contents, and a plot of each file. The files are in polygon format for use within the computer environment at LBL.

Location: 17.

80.014

Caldwell, Douglas R.; USA ETL, Fort Belvoir, VA.. **Design principles and automated choropleth mapping,** (at: Harvard Computer Graphics Week 1980).

Abstract: Design principles in choropleth mapping apply to graphics produced by traditional manual methods or new automated techniques. Shading is the only visual variable showing both the extent of the enumeration unit and relative differences in magnitude among the areas, and it should be a line printer, line plotter, or raster plotter.

Location: 17.

80.015

Canada. Statistics Canada. Census and Household Surveys Field Operations Branch. Spatial Systems Section. **Geography,** (at: Federal provincial Meeting on Census of Population and Housing) (Canada. Statistics Canada) 1980.

Abstract: Primarily concerns modifications planned for the 1981 Canadian Census with a brief discussion of a proposed test of automated mapping for Census mapping

Location: 01.

80.016

Carlin, Cyril B.; **Modern land records system: The Canadian Maritime examples**, (at: Land records systems can and should be modernized. Selected papers from American Institute of Planners 60th Anniversary Conference) (University of Wisconsin - Madison) 1980, Mar. pp.60-77.

Abstract: Describes a modern land records system being implemented in the three Maritime provinces by the Land Registration and Information Serivce (LRIS), and agency of the Council of Maritime Premiers.

Location: 01.

80.017

Carrigan, Brian; National Technical Information Service. **Computer aided mapping (Citations from the Engineering Index Data Base). Report for 1970-79**, PB80-804305, 1980, Feb..

Abstract: Research on the application of computer techniques to cartography is cited from the worldwide journal literature. Automatic mapping, geographic data bases, and computerized photomapping are included.

Location: 01.

80.018

Carrigan, Brian; National Technical Information Service. **Computer aided mapping (Citations from the NTIS Data Base). Report for 1976-79**, PB80-804297, 1980, Feb..

Abstract: Federally-sponsored research on the application of computer techniques to cartography is cited. Automatic mapping, geographic data bases, and computerized photo mapping are included.

Location: 01.

80.019

Carter, James R.; University of Tennessee. Department of Geography. **Non-academic interest in automated cartography**, 0196-6758, (at: Technical papers of the American Society of Photogrammetry ACSM-ASP Convention) (American Society of Photogrammetry) 1980 pp.495-500.

Abstract: Contains observations on automated cartography outside of academic which are largely based on four workshops of the Cartography Division of ACSM.

Location: 40.

80.020

Cesario, A. Lee; Denver Water Department. **Land use and water system planning**, 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.153-164.

Abstract: The Denver Water Department uses land use projections, a set of consumption factors and various network analysis and network building programmes to develop long range and more detailed short range plans for development of the treated water system. Widespread computer useage makes development and use of land use data systems an integral part of the engineering and planning process. Easy access and manipulation of data, by computer programming, makes it feasible to develop land use data files. These files provide information that can be used with analysis tools to develop long range plans.

Location: 01.

80.021

Chatterton, William A.; **Improvement of land planning information: The lawyer's perspective**, (at: Land records systems can and should be modernized. Selected papers from American Institute of Planners 60th Anniversary Conference) (University of Wisconsin - Madison) 1980, Mar. pp.48-52.

Abstract: Explores land records and needed improvements from the point of view of a practicing lawyer. Topics of discussion include development of legal flow charts, registry of deeds, a cadastral system.

Location: 01.

80.022

Churchill, Robert R.; Frankland, Phillip; Middlebury College. Department of Geography. **Using interaction computer mapping to teach cartographic concepts at Middlebury College,** (at: Harvard Computer Graphics Week 1980).

Abstract: Describes the use of interactive computer mapping to teach cartographic concepts to undergraduate students at Middlebury College, Middlebury, Vermont. The course emphasized the use of interactive mapping programmes that permitted the students to discover and evaluate basic cartographic concepts on their own.

Location: 17.

80.023

Clapp, James L.; Niemann, Bernard J. Jr.; University of Maine. College of Engineering and Science, Orons. **Land records: Costs, issues and requirements,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.1-26.

Abstract: Based upon a case study in Wisconsin and an overview of other related studies, the paper develops the premise that the improvement in the land records dealing the land ownership is the fundamental first step to bring about more useful land records for land planning and engineering. The paper presents arguments supporting this premise and builds upon this by reviewing the costs to the public to collect and maintain land records at the federal, state, and local levels of government, identifies and discusses the economic, administrative, legal, political, and technical issues which inhibit the usefulness of land records, and defines basic requirements that must be considered in order to accomplish meaningful long-term improvements in the usefulness of land records for planners, engineers and the public.

Location: 01.

80.024

Clark, Robert M.; Males, Richard M.; United States. Environmental Protection Agency MERL. Drinking Water Research Division. **Spatial and demographic data: A unified means for predicting urban service system performance,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.142-152.

Abstract: Describes the development of a water supply distribution cost model based on spatial and demographic data inputs. A comparison between the predicted and the acutal performance of reference system is presented.

Location: 01.

80.025

Collins, Stanley H.; Moon, George C.; University of Guelph. **Algorithms for dense digital terrain models,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models (Supplemental)) (University of Guelph. School of Engineering) 1980 pp.1-10.

Abstract: A family of computer algorithms has been developed at the University of Guelph to derive quanitative data and topographic and thematic maps from dense digital terrain models. The sources of such models are discussed briefly, and the rules that have been adopted for generating new programmes are described. Some of the programmes derive completely new quantitative and qualitative descriptors of the terrain, and all of them are intended for operations on 10(5) to 10(7) points or more. Finally a new geocoding algorithm is described for deriving thematic maps from arbitrary combinations of topographic and thematic data from a wide variety of sources.

Location: 01.

80.026

Collins, Stanley H.; Fetter, Lorraine; Moon, George C.; University of Guelph. School of Engineering. **Reservoir areas and capacities from digital elevation models,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models (Supplemental)) (University of Guelph. School of Engineering) 1980 pp.11-18.

Abstract: Single algorithms are presented for computing the flooded areas and storage volumes of reservoirs, from dense digital elevation models, as functions of the water level. In some watersheds and tidal basins, complex and disconnected volumes may occur at different stages, and algorithms are described that permit either manual or automatic choice of the area of the DEM that is to be included in the analysis. Possible sources of the DEM are discussed briefly, and applications are suggested for computing the stage relationships for floodwater retention and for drawndown capacity.

Location: 01.

80.027

Collins, Stanley H.; University of Guelph. School of Engineering. **Sources of DEM,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.84-88.

Abstract: Discusses the derivation of dense grid. DEM from the various elevation data sources that are now available to us. Includes the Gestalt System, orthophoto instruments, contouring and DEM production.

Location: 01.

80.028

Conway, R.G.; Piepgrass, E.B.; City of Calgary. **Calgary's Computer Mapping and Geographic Referencing System,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.59-73.

Abstract: Provides a detailed explanation of the City of Calgary's GES (Geographic Referencing System) which handles all common geographic identifiers and will fill two roles: (1) support of day to day operations (emergency vehicle dispatch, access to tax and assessment records, processing of development permits, etc.) (2) provide a mechanism for assembly of days for studies of specific geographic areas, whether previously defined or not. Also discussed is the Computer Assisted Mapping Project which employs an M&S Computer Graphics System to produce cadastral base maps. Future entries include land use classification (zoning), actual land use, assessment data, and utility data.

Location: 01.

80.029

Corven, David J.; University of South Carolina. Social and Behavioral Sciences Lab and Department of Geography. **Evaluating DIDS in a state government environment,** (at: Harvard Computer Graphics Week 1980).

Abstract: The Domestic Information Display System represents a state-of-the-art minicomputer based system that is designed to access Federal statistical data bases and produce a choropleth map on a color refresh graphical display terminal. The system was developed in 1978 at NASA/Goddard Space Flight Center at the request of the Executive Office of the President. In April the Social and Behavioral Sciences Laboratory (SBS Lab) of the University of South Carolina was awarded a matching grant (NAS 13-144) from NASA to conduct an objective evaluation of the Domestic Information Display System (DIDS) in a state government environemt. The one year project, which is being coordinated by the Council of State Governments, represents the first attempt to transfer DIDS to a setting outside of the sphere of the Federal Government.

Location: 17.

80.030

Cremont, Daniel; Institut Geographique National. Service de la Cartographie a Grande Echelle, Paris, France. **Application of computer technology in processing of cadastral surveying and mapping data,** (in: Canadian surveyor, Vol.34, no.1) (at: FIG International Symposium on Modern Technology for Cadastre and Land Information Systems) 1980, Mar. pp.21-40.

Abstract: Presents a land information system for creating, updating, and matching of topographic and cadastral maps in an integrated system. Gives descriptions of data encoding using plotters and digitizers and of data processing methods for cadastral map production.

Location: 01.

80.031

Crowder, Wm. Kent; COMARC Design Systems, San Francisco, CA.. **Geographic information system for a rural county,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.74-77.

Abstract: Relates how a geographic information system was developed and is used in the rural county of Jackson, CO.

Location: 01.

80.032

Curtiss, Jane B.; Argonne National Laboratory. Division of Biological and Medical Research. **Computer mapping of birth weights as an approach to environmental epideminlogy,** (at: Harvard Computer. Graphics Week 1980).

Abstract: Describes how the birth weight measure is developed using computer mapping techniques as an indicator of human response to environmental stress.

Location: 17.

80.033

Dangermond, Jack P.; Smith, Lowell Kent; Environmental Systems Research Institute, Redlands, CA.. **Alternative approaches for applying GIS technology,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.97-112.

Abstract: Discusses various approaches to acquiring and using GIS (Geographic Information System) technology. After some general remarks on the best way of making decisions about how to acquire this capability, five different approaches are discussed: creating one's own system, buying a turnkey software system, buying a turnkey hardware/software system and using a contractor to provide GIS special services or a complete project. For each of these options a brief description, some lessons of experience and a summary of the pros and cons are presented. Following summary remarks an appendix is included which describes briefly a current hardware/software system for GIS use.

Location: 01.

80.034

Data Resources, Inc.. **Index to the data banks,** (at: Harvard Computer Graphics Week 1980).

Abstract: Provides a brief description of various data banks in the U.S. and other countries.

Location: 17.

80.035

Davis, Darryl W.; The Hydrologic Engineering Center. Planning Analysis Branch, Davis, CA.. **Flood mitigation planning using HEC-SAM,** 0-87162-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.113-128.

Abstract: Flood control and flood plain management investigations using spatial data management techniques are increasing in the Corps' of Engineers. Pilot studies initiated in the mid-1970's were successful in consolidating and analysis concepts, fostering the development of spatial data file creation and management technology and enhancing the consideration of existing and alternative future development patterns in Corps' planning studies. Over 30 studies using HEC-SAM, the Corps' spatial data management system, are now completed or underway. HEC-SAM was created through selective acquisition of commercial software, adaption of academic research products, and development by researchers at the Corps' Hydrologic Engineering Center (HEC). The HEC role continues to be that of system developer and technology transfer agent. The evolution, present capabilities, and applications of HEC-SAM are described. Observations are offered on spatial technology development, implementation, and servicing.

Location: 01.

80.036

Decision Dynamics Corporation. **Land Status Automated System (LSAS) Project. Functional analysis phase: Final report**, 1980, Apr. 21.

Abstract: Summarizes and consolidates the findings of the functional analysis phase of the LSAS project and provides direction for the future development of LSAS. Updates material previously presented in the ten companion reports. Topics include present situation, communication requirements, need for a file tracking system, data base management model, developmental and operational costs, etc. Emphasis of this phase of the project was on records management and public lands.

Location: 01.

80.037

Dedrick, Drew; Montgomery County Planning Board. Mayrland-National Capital Park and Planninc Commission, Silver Sprint, MD.. **Using fiscal models to evaluate land plans - The sububan Montgomery County, Maryland Experience**, 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.88-96.

Abstract: Discusses the use of a Fiscal Impact Model in Montgomery County, MD.

Location: 01.

80.038

DeSalvo, Joseph M.; Converse Ward Davis Dixon, Caldwell, N.J.. **Geotechnical engineering data systems**, 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.165-171.

Abstract: Addresses the application of a government-operated multi-purpose land data system to the practice of Geotechnical Engineering. Discusses land development parameters in detail.

Location: 01.

80.039

Dickinson, Dr. W.T.; University of Guelph. School of Engineering. **Hydrologic applications of DTMS**, 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.109-112.

Abstract: Examples of applications of DTMS in hydrologic research are offered in two categories-macroscale and microscale. The macroscale studies involve the consideration of watershed areas e.g. the mapping of erosion potential in space and time, and the mapping of sediment contributing areas. The microscale studies are those performed on a plot basis, and examples are given for the determination of streambank erosion rates and the description of surface depression storage.

Location: 01.

80.040

Alberta. Energy Resources Data System. **Master scope document. Draft,.**

Abstract: Provides a detailed description of the Energy Resources Data System with respect to perspective, user requirements, system architecture, implementation plan and project organization.

Location: 01.

80.041

Faust, N.L.; Jordan, L.; Furman, M.D.; ERDAS, Inc. (Earth Resources Data Analysis Systems), Atlanta, GA.. **Development and implementation of a low cost micro computer system for Landsat analysis and geographic data base applications**, (at: Harvard Computer Graphics Week 1980).

Abstract: Discusses the development of the IMGRID system from a large computer to a microcomputer and how analysis programmes were implemented to process Landsat satellite data to be used as one element in a geographic data base.

Location: 17.

80.042

Fisher, Terry; MacDonald, Connie L.; Canada. Department of the Environment. Lands Directorate. **Overview of the Canada Geographic Information System (CGIS)**, 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.48-51.

Abstract: Discusses the CGIS with regard to capabilities including digitizing of maps, management of large geographic data bases, data manipulation, and outputs of statistical and map information.

Location: 01.

80.043

Fritz, Curtis L.; **Update of the DIDS Program**, (at: Harvard Computer Graphics Week 1980).

Abstract: The Domestic Information Display System (DIDS) is a cooperative developmental effort by twenty-seven Federal government agencies plus the Executive Office of the President and with participation by the Legislative Branch. The programme is now in its second year of development. The first year of development was devoted to experimentation and demonstration of the technology for the stated programme objectives: a. to facilitate the analysis and decision making process on national issues, and b. to facilitate effective access to Federal statistics. This second year of development is devoted primarily to the achievement of an initial operational capability. This present paper reports on the results of that first year of demonstration, the status of achieving an operational capability, and a preview of the next period for DIDS.

Location: 17.

80.044

Gartner, John F.; Gartner Lee Associates Ltd.. **Engineering geology terrain mapping - a data base for digitizing**, 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.105.

Abstract: Describes the background of this massive mapping project, reviews the legend format, shows examples of both simple and complex units and explores the possibilities of producing digital terrain models from these maps.

Location: 01.

80.045

Gonzalez-Fletcher, A.; Instituto Geografico Agustin Codazzi, Bogota, Columbia. **Modern technology in cadastral operation in developing countries**, (in: Canadian surveyor, Vol.34, no.1) (at: FIG International Symposium on Modern Technology for Cadastre and Land Information Systems) pp.54-64.

Abstract: Describes a pilot cadastral system in Colombia. Provides details of surveying methods, hardware, map production and data bank development.

Location: 01.

80.046

Greenlee, David D.; Technicolor Graphic Services, Inc. EROS Data Center, Sioux Falls, ND.. **Application of spatial analysis techniques to remotely sensed images and ancillary geocoded data**, (at: Harvard Computer Graphics Week 1980).

Abstract: The Earth Resources Observation Systems (EROS) Data Center of the U.S. Geological Survey has extended the image processing capabilities in its Data Analysis Laboratory by developing and implementing techniques for analysis of ancillary geographically encoded data. These techniques include: a) manipulation of topographic data (elevation, slope, aspect, and solar angle of incidence), b) overlay analysis of multisource data, c) surface generation by interpolation, and d) minimum distance search. The application of these techniques has resulted in improvements in the multispectral classification of remotely sensed data and has allowed complex land resource problems to be more effectively addressed.

Location: 17.

80.047

Greulich, Gunther H.; Boston Survey Consultants Inc., MA.. **Planning and engineering requirements for a land data system,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.42-53.

Abstract: Discusses in detail the four key elements essential to the development of a multi-purpose cadastre: Horizontal Control, Vertical Control, Public Ways and Utilities. One of an engineer's responsibilities is to modernize and coordinate these into an effective land data system.

Location: 01.

80.048

Guindon, B.; Goodenough, D.G.; Teillet, P.M.; Canada Centre for Remote Sensing, Ottawa, Ont.. **Digital terrain models and remote sensing,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.90.

Abstract: The production of thematic data at the Canada Centre for Remote Sensing (CCRS) is outlined. Digital products available from CCRS include satellite and airborne multispectral scanner and synthetic aperture radar images. Rectification of LANDSAT imagery to a UTM grid is accomplished, in an operational mode, on the Digital Image Correction System. Analysis of remotely sensed imagery is carried out on the CCRS Image Analysis System (CIAS).

Location: 01.

80.049

Guptill, Stephen C.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **Thematic map production from digital spatial data,** (at: Harvard Computer Graphics Week, Cambridge MA. Jul 27 - Aug. 1, 1980).

Abstract: The U.S. Geological Survey is developing a nationwide, multipurpose digital cartographic data base. Cartographic information can be collected, organized, and sorted in such a way that the common data base may serve a wide range of applications. One of the users of the data is graphic production. Computer graphic techniques applied to digital spatial data can produce cartographic products that would be difficult, time consuming, and in some cases, impossible to produce by traditional methods. One example of this application is the preparation of thematic maps for color lithographic reproduction from digital spatial data.

Location: 17.

80.050

Hamilton, Angus C.; University of New Brunswick. Department of Surveying and Engineering. **Institutional and cultural aspects of place-related information systems,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.17-27.

Abstract: The institutional and cultural questions discussed in three in-depth studies on place-related information systems are summarized. The studies were on infrastructure, on the principal concepts for a long-term mapping programme and on remote sensing for renewable resource monitoring.

Location: 01.

80.051

Herot, Christopher F.; Carling, Richard; Fridell, Mark; Kramlich, David; Computer Corporation of America. Cambridge, MA.. **Prototype Spatial Data Management System,** (in: Computer graphics, Vol.14, no.3) (at: SIGGRAPH '80 Conference Proceedings) 1980, July pp.63-70.

Abstract: Describes a prototype Spatial Data Management System (SDMS) which employs a set of colour, raster scan displays driven by a large minicomputer. This system provides a uniform mechanism for accessing a wide variety of data types in a manner which does not require the use of a formal command or query language.

Location: 16.

80.052

Holloway, Donald P.; Scott, Ronald F.; North Carolina. Department of Administration Land Records Management Program. Raleigh, N.C.. **Land records management in North Carolina,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.33-41.

Abstract: Discusses the development design concepts and key elements of the North Carolina Land Records Management Program which provides the basic structure for uniform large scale maps, coordinated property surveys and geo-coded parcel identifiers.

Location: 01.

80.053

Hostrop, Bernard W.; Bureau of Land Management, Washington, D.C.. **Computerized surveying and plotting a support of a multi-purpose cadastral program,** (at: Harvard Computer Graphics Week 1980).

Abstract: The Bureau of Land Management is currently engaged in surveying, or resurveying, lands of high value along portions of the Front Range in Colorado. In conjunction with these surveys, new methods and some of the most sophisticated survey instrumentation systems available are being employed at Georgetown. These systems support automatic computer generation of geographic coordinates which are planned to be used as data storage and retrieval indices in any modernization of the Federal lands data records system. The ultimate goal, for the Division of Cadastral Survey, is the achievement of a computer-generated plat and field notes.

Location: 17.

80.054

Hostrop, Bernard W.; United States. Development of the Interior. Bureau of Land Management. Division of Cadastral Survey. **Federal roles and responsibilities in a modernized land data system,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data systems. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.27-32.

Abstract: Discusses in detail the public land survey system and the federal role in this system.

Location: 01.

80.055

Howell, James A.; Sinton, David F.; M&S Computing, Inc., Huntsville, AL.. **Interactive graphics: Stage II special applications,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.54-70.

Abstract: The development of interactive graphics design systems which are combined with data management and retrieval systems has advanced to the stage where they provide functional capabilities which permit a wide variety of users with special applications to communicate information from one data base to another. This provides new opportunities for a diverse community of users to enhance their productivity by using various sources of data.

Location: 01.

80.056

Hubert, Pierre J.; Canada. Statistics Canada. Census and Household Surveys Field Operations Branch. Spatial Systems Section. **Linking postal codes to 1981 Census data,** (at: Federal-provincial Meeting on Census of Population and Housing) (Canada. Statistics Canada) 1980, Jan..

Abstract: Discusses the linkage of Postal Codes to 1981 Census data which is made to the smallest identifiable physical element, the occupied dwelling. Presents the five phases required to achieve the linkage and three scenarios on costs. For each phase, two or three options are discussed on such considerations as risk, quality, advantages, disadvantages and costs. Presents both an all-Canada and a British Columbia approach, and concludes by providing some general comments on the utility of the product.

Location: 01.

80.057

Iler, William.; CL-54 Daley Center, Chicago, IL.. **Use of computer mapping and graphics in planning and public works management decision-making: The case of Chicago,** (at: Harvard Computer, Graphics Week 1980).

Abstract: The results obtained from Chicago's three-year project to develop its Computer Mapping and Graphics System are reviewed. The mapping problems encountered by City agencies are outlined, the evolution of a "Coordinated Approach" is described, and some of the cartographic products of this unique System are previewed. A brief overview of the System is given, and a discussion of its use in management planning and decision-making concludes this review.

Location: 17.

80.058

Ives, Laura; Ontario Hydro. Route and Site Selection Division. **Ontario Hydro's computer assisted Route and Site Selection System,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.30-43.

Abstract: Describes the Route and Site Selection System which stores, retrieves and manipulates mapped information.

Location: 01.

80.059

Johnston, Donald R.; Gibbs & Hill, Inc. New York, N.Y.. **CADA-(Computer Aided Design & Engineering),** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference.) (American Society of Civil Engineers) 1980 pp.193-201.

Abstract: Gibbs & Hill initiated development of CADAE in 1972 to provide a means of adapting computer graphics to the task of engineering design, analysis and drafting. The system permits the engineer to design and display any shape however complex, with a light pen on a graphics terminal. Designs can be quickly replicated, stacked, separated, rotated or otherwise oriented within a designated perimeter. Finished design modules are stored in the system memory for future applications or review at any time. As increasing familiarity with CADAE was gained, drafting and design efficiencies improved providing increased staff time for more creative tasks. The experience with CADAE has encouraged the firm to expand their efforts toward the development of a geo-based information system. The new capability will provide in-house support for the natural resource, energy, contracting and environmental services of Gibbs & Hill.

Location: 01.

80.060

Kellerman, Aharon; University of Haifa. Department of Geography, Haifa, Israel. **Use of computer maps in multiple regression analysis: A U.S. country-map application,** (at: Harvard Computer Graphics Week 1980).

Abstract: Briefly discusses the advantages of the use of mapping in multiple regression analysis of spatial data. Provides an example of a full-cycle multiple regression analysis for a variable with data on all 3,076 U.S. counties using

integrated computer mapping.
Location: 17.

80.061
Kerr, John H.; Ontario. Ministry of Natural Resources. **Georeference system for the Ontario Ministry of National Resources,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.45-47.
Abstract: Discussing the development of the Ministry's georeference system in terms of software and capabilities such as data collection, editing, polygon, digitizing, location identifier producing.
Location: 01.

80.062
Kinzy, Stephen W.; HDR Systems Inc., Omaha, NB.. **Urban geoprocessing: Staged development concept,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.172-192.
Abstract: Describes geoprocessing systems in terms of three categories census -related, inventory and engineering. Also discusses geoprocessing system planning and staged development with emphasis on the GBF/DIME system.
Location: 01.

80.063
Klingenberg, F.; Andris, H.R.; Cadastral Survey of Zurich, Switzerland. **Experience with computer processing and storage of data in a project of cadastre renovation,** (in: Canadian surveyor, Vol.34, no.1) (at: FIG International Symposium on Modern Technology for Cadastre and Land Information Systems) pp.75-82.
Abstract: Discusses a graphic-numerical interactive system for dealing with mapping data for map revision of cadastral maps.
Location: 01.

80.064
Koller, Dr. Glenn R.; E.I. du Pont de Nemours & Co. Savannah River Laboratory, Aiken, SC.. **Interpretation and display of the NURE Data Base using computer graphics,** (at: Harvard Computer, Graphics Week 1980).
Abstract: Discusses the role of computer graphics by the Savannah River Laboratory in their collection and geochemical analyses of water and sediment samples from 30 eastern and 7 western states. This task supports the primary objective of the NURE (National Uranium Resource Evaluation programme to assess the nation's recoverable uranium reserves.
Location: 17.

80.065
Langford, Glen J.; **Grid to polygon conversion in geographic information processing. An application to resource planning for the Cypress Hills,** (at: Harvard Computer Graphics Week 1980).
Abstract: Demonstrates the application of a hybrid geographic information system for Resource Planning in Cypress Hills Provincial Park, Alberta, Canada. Specific emphasis has been placed on the grid to polygon conversion capabilities, which, in the opinion of the author, are not only unique, but are extremely valuable in a general geographic information systems context.
Location: 17.

80.066
Lemer, Andrew C.; Felsbury, Robert W.; PRC (Nigeria) Ltd., McLean, VA.. **Land data systems for transport planning in undeveloped areas,** 0-87262-243-6, (at: Planning and engineering interface with modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.129-141.
Abstract: Discusses data needs and sources for transport planning in undeveloped areas. Provides examples for which the use of a coordinated land data system could be very useful.

Location: 01.

80.067
Linders, James G.; University of Guelph. Department of Computing Science. **Digital georeferenced data bases**, 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.16.
Abstract: Examines aspects of the design and implementation of a georeference system with specific reference being given to base mapping as well as the integration of thematic applications within the base. The characteristics of georeference data bases are identified and discussed in terms of digital technology.
Location: 01.

80.068
Macdonald, Connie L.; Comeau, M.A.; Canada. Department of the Environment. Lands Directorate. Land Data Systems Division. **Analysis of spruce budworm defoliation: A graphics application,** (at: Harvard Computer Graphics Week 1980).
Abstract: The Canada Land Data System (CLDS), Lands Directorate, Environment Canada is assisted the Nova Scotia Department of Lands and Forests in their studies of the spruce budworm damage on Cape Breton Island. CLDS has created a data base and provided tabular reports, maps, digital files and a local interactive graphic analysis capability. This report will give an overview of the study area, a description of the data base and the methodology used for its creation along with examples from the Interactive Graphics Subsystem (IGSS) which was used for the analysis.
Location: 17.

80.069
MacDonald, K.B.; Canada. Department of Agriculture. Land Resource Research Institute. **Cartographic subsystem of CanSIS,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.28-29.
Abstract: Describes the Canada Soil Information System (CanSIS) with emphasis on the cartographic subsystem - one of the two major subsystems constituting it.
Location: 01.

80.070
Mack, A.R.; Shields, J.A.; Canada. Department of Agriculture. Agrometeorology and Soil Classifications Sections. **Thematic Digital Terrain Maps (DTM) for Crop classification analysis of Landsat data**, 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.91-96.
Abstract: Presents the results of a study in which parameters characterizing a soil-climatic region were selected for potentially defining a land system having uniform spectral and trapping attributes from LANDSAT data.
Location: 01.

80.071
Madill, R.J.; MacRitchie, S.; Systemhouse. Graphic Division. **Use of an analytical stereoplotter for acquiring digital elevation data,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.73-83.
Abstract: Describes semi-automated, analytical methods for profiling, scanning, gridding, cross-sectioning and on-line data collection from stereomodels, for digital elevation modelling, that may be implemented on an analytical stereoplotter.
Location: 01.

80.072

Maher, Robert V.; Boyd, Michael; Langford, Glen J.; Alberta. Department of Recreation & Parks. **Towards the calibation of LANDSAT spectral values: A new approach integreting map data and satellite information,**. 1980, Mar..

Abstract: Describes the application of a software system, to calibrate LANDSAT spectral values. The objective of the research is to integrate map data and satellite information in the analysis of LANDSAT spectral values for the purposes of park management. Although the study of LANDSAT spectral variablility has intrinsic scientific interest, it is only through calibration with mundane variables that it will become an accepted tool in resource management.

Location: 01.

80.073

Males, Richard M.; W.E. Gates and Associates Inc.. **ADAPT: The use of complex models with a geographic data base,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.215-228.

Abstract: The ADAPT (Areal Desin and Planning Tool) System is a geo-based modeline system consisting of a comprehensive land data base, display methodologies, and applications modules for a variety of engineering design and planning purposes. ADAPT is unique in that the mechanism of computer storage of land data was designed specifically to interface to complex analytical mathematical models for planning and design. ADAPT uses a triangular cell data structure to model terrain and record information on land use, demography, soils, sub-surface conditions, and other land-based and waterbased data. Coordinates are stored in both latitude/longitude and state plane coordinates. The triangular cell structure provides an excellent digital terrain model, essential for the complex hydrologic modelling programmes and pipeline design applications of ADAPT. The system has been applied statewide in Ohio, and in a variety of regional and local areas ranging in size down to two square miles, for applications in environmental planning, population projection, rainfall-runoff prediction, sewer design, land suitability analysis, and cut-and-fill analysis

Location: 01.

80.074

Marks, G. Warren, ed.; **Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference, Denver, Co., June 2-4, 1980,** (American Society of Civil Engineers) 1980.

Abstract: Focuses on the planning and engineering interface with a modernized land data system to identify the current status of system development, to aid to system application, and to identify problem areas and the development of solutions to problems.

Location: 01.

80.075

McLaughlin, John; University of New Brunswick. Land Resources Information Laboratory. **Development of multi-purpose land information systems: The challenge for the next decade,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.245-253.

Abstract: Reviews briefly the major land management institutions which have evolved in North American society, and the information infrastructure which has developed to support these institutions which are currently undergoing a fundamental transformation in response to a changing cultural and environmental horizon.

Location: 01.

80.076

McLaughlin, John; University of New Brunswick. Land Resources Information Laboratory. **Evolution and current status of the Maritimes Land Registration and Information Service,** (at: Harvard Computer Graphics Week 1980).

Abstract: The Maritime Land Registration and Information Service is to date the most complex and ambitious cadastral endeavour on the continent. Over the next five years, it is anticipated that the initial control, base mapping and cadastral overlay phases of the programme will be largely completed. More attention will be focused during this period, as well, on the parcel index file and active land registration phases. Several technical and economic studies are planned in conjunction with these activities, which should be of considerable value to anyone interested in the design and development of proprietary-based land information systems.

Location: 17.

80.077

Meehan, Grady B.; University of North Carolina at Chapel Hill. Institute of Research in Social Science. **Statistical mapping with a statistical package,** (at: Harvard Computer Graphics Week 1980).

Abstract: Demonstrates how the addition of a computer mapping procedure to a standard statistical package would provide a more powerful, time saving tool to those who work with geographical data.

Location: 17.

80.078

Mills, Robert F.; New Jersey. Department of Environmental Protection. Bureau of Management Information and Data Systems. **Remoting sensing inputs to a 19th century land market model,** (at: Harvard Computer. Graphics Week 1980).

Abstract: The use of satellite remotely - sensed imagery as baseline data for modelling can provide a realistic test of regional economic theory. Categorized Landsat image data have been used to provide three spatial inputs to a land market model developed by Von Thunen in the early part of the 1800's. Unlike many more recent efforts of regional scientists, the model incorporates the ecological capability of the land to support a particular market use. While the model has previously been computer-programmed, realistic tests of results have not been conducted due to the lack of detailed capability data. Use of categorized Landsat data as a surrogate for capability data permits comparison of results with and without such detailed data. Data preparation and comparative evaluation of model results are aided by interactive color graphic techniques.

Location: 17.

80.079

Mitchell, William H.; **Information technologies and government processes,** (at: Land records systems can and should be modernized. Selected papers from American Institute of Planners 60th Anniversary Conference) (University of Wisconsin - Madison) 1980, Mar. pp.31-47.

Abstract: Presents a historical overview and stresses the importance, in the western world, of improved information and for the protection of private land ownership rights for planners in public programme administration.

Location: 01.

80.080

Morrison, Joel L.; University of Wisconsin. Department of Geography. **Progress in computer-assisted cartography within academia,** 0196-6758, (at: Technical papers of the American Society of Photogrammetry ACSM-ASP Convention) (American Society of Photogrammetry) 1980 pp.501-506.

Abstract: Summarizes the current status of the cartographic discipline in academia today. Two aspects are treated: hardware and software considerations and curricula. The direction of these two aspects of the cartographic discipline are extrapolated into the short term future. It is concluded that future hardware and software developments will be less spectacular than in the past decade and that the discipline is entering a maturing stage in its use of computer technology. Current education curricula are inadequate and a rather quick change is needed to prepare the future professional cartographer for the cartographic discipline of 1990.

Location: 40.

80.081

Nagy, George; University of Nebraska. Department of Computer Science. **Research goals in mathematical pattern recognition,** (at: Harvard Computer Graphics Week 1980).

Abstract: Summarizes the topics of discussion covered by the Working Group on Mathematical Pattern Recognition and Image Analysis which included image registration and rectification, the registration (overlay) of digital image arrays obtained at different times and possibly from different sensors (satellite MSS and RBV, radar, airphoto), the precise earth-location of images including consideration of topographic effects, the definition and automatic extraction of control points, the exploitation of USGS-prepared digital terrain models, the development of meaningful measures of accuracy for both registration and rectification, the relation between, scale, orientation, photometric quantization, spatial sampling, and accuracy, the question of the utility of a "universal" reference coordinate system, and the need for increased understanding of the resampling process.

Location: 17.

80.082

Nichols, John T.; University of Alabama. **Computer cartography services of the University of Alabama Cartographic Laboratory,** (at: Harvard Computer Graphics Week 1980).

Abstract: Elaborates on the computer cartography services at the University of Albama Cartographic Laboratory. Topics of discussion include computer cartography selection rationale, resources available (software and hardware) and cartographic examples.

Location: 17.

80.083

Niemann, Bernard J. Jr.; **Land records systems can and should be modernized. Selected papers from American Institute of Planners 60th Anniversary Conference, Kansas City, Missouri, Oct. 12, 1977. IES report 108,** (University of Wisconsin-Madison) 1980, Mar..

Abstract: Contains papers focussed upon improving locally utilized and managed land records.

Location: 01.

80.084

Niemann, Bernard J. Jr.; Clapp, James L.; Larsen, Barbara J.; **Multipurpose cadastre: The need, the existing costs, the criteria, and the implementation recommendations,** (at: Land records systems can and should be modernized. Selected papers from American Institute of Planners 60th Anniversary Conference) (University of Wisconsin-Madison) 1980, Mar. pp.5-30.

Abstract: Documents the costs of land records from the perspective of the citizen and includes a discussion of problems with institutional causes. Based on the Wisconsin case study - the only known research in the United States that has documented minimum annual government expenditures for compiling land records.

Location: 01.

80.085

Olsten, C. James; Dames & Moore, Los Angeles, CA.. **Economic modeling of optimum energy facilities locations,** (at: Harvard Computer Graphics Week 1980).

Abstract: Describes a study conducted by Dames & Moore to establish potential sites for a coal fired plant. Discusses the economic approach taken involving the application of true spatial analysis. Makes reference to the Geographic Information Management Systen (GIMS) which was utilized in the study.

Location: 17.

80.086

Orr, Joel N.; Vernon Graphics Inc. Elmsford, N.Y.. **RMLR: What it means to the civil engineer,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.229-232.

Abstract: The Regional Mapping and Land Record project is an innovative, cooperative base-mapping effort for the Delaware Valley around Philadelphia. In the initial pilot project, photogrammetric techniques were coupled with automated cartography methods in an attempt to produce highly-accurate digital maps, at the lowest possible cost. The approach and results are discussed as background for examining the pilot project's implications for the civil engineer. Technical, professional and economic considerations are covered.

Location: 01.

80.087

Patterson, Fred A.; McAdams, M. Patrick; NASA. Earth Resources Laboratory. **Use of Landsat MSS data and ancillary data to produce erosion hazard potential maps,** (at: Harvard Computer Graphics Week 1980).

Abstract: The ability to integrate Landsat's remotely sensed multispectral scanner data with ancillary data such as digitized soil surveys significantly enhances the utility of both. This report describes one such application which employs the Universal Soil Loss Equation to calculate erosion potential to produce a geographically corrected erosion hazard potential map. This application is part of a NASA demonstration project conducted by the National Space Technology Laboratories (NSTL) Earth Resources Laboratory (ERL) with the Iowa Geological Survey (IGS) and other Iowa state and federal agencies.

Location: 17.

80.088

Pierce, Robert R.; Rado, Burce Q.; Environment Protection Division. Department of Natural Resources. **Georgia Resource Assessment Project: Institutionalizing Landsat and geographic data base techniques,** (at: Harvard Computer Graphics Week 1980).

Abstract: The Department of Natural Resources, Environmental Protection Division has been involved in a project for computer mapping and analysis for approximately four years. The initial efforts include the processing of Landsat digital data for each 1.1 acre cell in Georgia and subsequently categorizing the land cover conditions. The project has included the completion of several test cases as well as the establishment of an operational hardware and software processing capability at the Georgia Institute of Technology. Following the completion of the test cases, the operational capability was developed to process the entire state (60,000 sq. miles and 14 Landsat scenes) in a cooperative project between eleven divisions and agencies at the regional, state, and federal levels. Products have been developed for agencies such as the Corps of Engineers, Game and Fish Division, Georgia Forestry Commission, and several other agencies in both mapped and statistical formats.

Location: 17.

80.089

Rhind, David W.; Evans, Ian S.; University of Durham. Department of Geography, United Kingdom. **Display of population census data,** (at: Harvard Computer Graphics Week 1980).

Abstract: The decennial Census of Population is possibly the most widely used single data set in Britain, it plays a fundamental role in the analysis and monitoring of changes in the distribution of population, of the characteristics of households and of such socio-economic variables as journey-to-work patterns and migration. It is also needed for standardization of many other data sets, such as mortality statistics. Despite this importance, there has been no routine mapping and other graphic display of British census data. This paper describes the fruits of the experience of a group of individuals involved in a major project to analyse and display the 1971 Census data: the results include a wall chart (COI 1979), a national atlas of population (HMSO 1980) and numerous descriptions of statistical analyses (e.g. Evans 1979).

Location: 17.

80.090

Ridgway, June; City of Detroit. Finance/Assessments Division. **IPDS: A multipurpose land information system for the eighties,** (at: Harvard Computer Graphics Week 1980).

Abstract: Describes the Integrated Physical Data System (IPDS) as conceived and implemented by the City of Detroit. IPDS was intended to meet the City's many diverse real estate information needs using a single integrated database of the city's physical real estate data. IPDS was inteded to support on-line data entry, rerieval and inquiry.

Location: 17.

80.091

Roberts, Willis F.; Council of Maritime Premiers. Land Registration and Information Service. **Keeping land related information up-to-date,** (in: Canadian surveyor, Vol.34, no.1) (at: FIG International Symposium on Modern Technology for Cadastre and Land Information Systems) pp.5-13.

Abstract: Concerns the development of the LRIS in the Maritimes. Outlines the four phases of system development and details the data collection and updating.

Location: 01.

80.092

Sailor, John K.; Berry, Joseph K.; Yale University. School of Forestry and Environmental Studies. **Use of a geographic information system in storm runoff prediction,** (at: Harvard Computer Graphics Week 1980).

Abstract: The purpose of this study was to demonstrate the use of a generalized geographic information system for calculating the spatial watershed characteristics necessary for storm water modeling. The approach taken emphasized computerized spatial analysis and its benefits to hydrologic inquiry, rather than the display and exposition of graphic products. In addition to automating the spatial calculations for input to the SCS method, a geographic information system was used to analyze the behavior of the method under various spatial conditions.

Location: 17.

80.093

Schrock, Bryce, L.; United States. Army Engineer Topographic Laboratories. Computer Sciences Laboratory. **Applications of digital displays in photointerpretation and digital mapping,** 0196-6758, (at: Technical papers of the American Society of Photogrammetry ACSM-ASP Convention) (American Society of Photogrammetry) 1980 pp.201-212.

Abstract: The Digital Image Analysis Laboratory (DIAL) at USAETL is a large-scale interactive system designed for research and development activities in digital image processing. The system has been successfully applied to a variety of investigations in both digital mapping and photointerpretation as described in this presentation. Recently a Demonstration Image Processing System (DEMONS) has been added to the DIAL system to serve as a high-speed work station for processing very large digital images. Although DEMONS has been reasonably

successful in manipulating large images, its limitations indicate that future such systems might be hybrid systems combining the best features of both hardcopy (film) and softcopy (cathode ray tube) exploitation systems.
Location: 40.

80.094
Shelton, Ronald L.; McRae, Stephen D.; Michigan State University. Department of Resource Development. **Integrated technology for development planning,** (at: Harvard Computer Graphics Week 1980).
Abstract: The intent of our paper is to suggest that the integrated use of remote sensing, maps, computer-based information systems, and quantitative analytical techniques --guided by the decision making needs of operational agencies--provides practical benefits not always obtained in the use of a single technology. However, the integration, to be effective, should be adaptive, that is, the process of integration should be able to adjust to the human and institutional resources and requirements associated with different users. In addition, the integration is perhaps most effective when in addition to being adaptive, it is guided by an analytical approach, such as modelling, which is able to act as a catalyst in bringing the various elements of the study together. We view the CRIES project as an example where this integration is taking place in an adaptive manner. The Emmet county study is, for us, a case wherein a high degree of interaction is being achieved between model and information system within the context of resource planning.
Location: 17.

80.095
Silver, Jacob; United States. Bureau of the Census. **Digital cartographic files available from the Census Bureau,** (at: Harvard Computer Graphics Week 1980).
Abstract: Digital cartographic files reflecting the location or boundaries of legal or statistical entities are a necessary input to any automated cartographics programme. Over the next 18 months, the Census Bureau will be releasing, along with the 1980 census population counts, several digital (X-Y coordinate) files as part of the decennial census operations. Because of the basic content of these files, they are expected to become major cartographic and analytical tools to the user community in the years to come. These files include the county boundary files (CBF), the census tract boundary file (CTBF), the master area reference file (MARF), as well as the GBF/DIME-File. In addition, there already is available the point information, or PICADAD file, from the 1977 Economic Censuses.
Location: 17.

80.096
Smith, Andree Yvonne; Blackwell, Richard J.; Jet Propulsion Laboratory, Pasadena, CA.. **Development of an information data base for watershed monitoring, Photogrammetric engineering and remote sensing,** Vol.46, no.8 1980, Aug. pp.1027-1038.
Abstract: As an aid to the water quality management effort at Lake Tahoe the Image Procesing Laboratory at Caltech's Jet Propulsion Laboratory has integrated Landsat multispectral scanner data, Defense Mapping Agency digital terrain data, conventional maps, and ground data to create a comprehensive information data base for Lake Tahoe and its environs. The project used the resources of the JPL-developed Image Based Information System (IBIS) programmes to augment data gathered by the U.S. Forest Service for the Tahoe Regional Planning Agency. The IBIS data base method allowed cross correlation of Landsat imagery and topographic data with a variety of environmental data relating to such parameters as surface runoff, drainage basin acreage, and terrain configuration. Parameters were evaluated and compared for each drainage basin defined by the Tahoe Regional Planning Agency (1977). The methods used to construct and update the information data base are described and evaluated. In addition, the utility of including Landsat imagery is discuss ed.
Location: 10.

80.097

Strange, Kenneth B.; Mangum, S.E. Jr.; Turner Collie & Braden Inc., Houston, TX.. **Data management for a metroplex,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.202-214.

Abstract: Access to and management of the myriad of data used in a metropolitan area is the major problem faced by city administrators. The daily press of problem solving requires immediate access to and evaluation of large quantities of data to allow meaningful decisions to be made for maintenance, operations, and improvements to city-owned facilities. The solution to this problem is the storage and retrieval of the data from a geographically oriented interactive computer data base. METROCOM, the metropolitan common data base, being implemented by the City of Houston facilitates the storage of geographically oriented data with the capability of graphical display as well as nongraphic attribute data retrieval.

Location: 01.

80.098

Swann, Richard; Northway-Gestalt Operation. **Production and processing of Gestalt digital elevation models,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.57-72.

Abstract: The methods used in production of the Gestalt digital evaluation models and techniques for processing them are discussed.

Location: 01.

80.099

Taylor, D.R.F., ed.; Carleton University. Department of Geography, Ottawa, ONT.. **Computer in contemporary cartography,** 0471 276995, (series: Progress in contemporary cartography), (John Wiley & Sons. Ltd.).

Abstract: Covers all aspects of computer assisted cartography, combining theory, methodology and practice. Deals with a variety of related themes relevant to both topographic and thematic mapping. In addition, the costs and benefits of computer aided cartography are discussed.

80.100

Tedrow, Lucky M.; Hoerauf, Eugene A.; Western Washington University. **Atlas supplement to the 1972 County and City Data Book,** (in: Computer graphics, Vol.14, no.3) (at: SIGGRAPH 80' Conference Proceedings) 1980, July pp.58-62.

Abstract: A series of maps presenting the spatial distributed of the tabular data from the 1972 County and City Data Book is discussed. Using an automated mapping procedure developed on a minicomputer by two non-computer scientists, 196 choropleth maps of county-level data for the State of Washington were prepared. The maps provide governmental decision-makers and planners a means to quickly comprehend patterns in the data that are not readily noticeable in the tabular presentation of the data.

Location: 16.

80.101

Texas Natural Resources Information System. **Texas Natural Resources Information System: Forestland mapping by computer-assisted analysis of Landsat data,** (at: Harvard Computer Graphics Week 1980).

Abstract: Utilizing existing remote sensing capabilities, the Texas Natural Resources Information System (TNRIS) has satisfied a request for assistance submitted by the Texas Forest Service (TFS). A computer-assisted analysis of Landsat Multispectral Scanner (MSS) data was conducted for the purpose of developing an efficient and cost-effective monitoring system for determining land withdrawals from the commercial forestland base. MSS data representing a USGS 7 1/2 minute quadrangle location in Montgomery County was selected for analysis. Analysis results consisted of a 1:24,000 scale land cover map with specific categories depicted and a tabular listing of computed acreage. Total acreage estimates for the entire test site, as derived from Landsat and groundtruth maps, were almost identical. The classification accuracy (85%) was determined by field evaluation and random sampling procedures. The advantages of Landsat analysis over photo interpretation procedures were clearly demonstrated for this particular requirement. Subsequent analysis efforts will be aimed at updating TFS Inventory information and acquiring supportive information important to planning decisions related to the decline of the commercial forestland base.

Location: 17.

80.102

Tischler, Paul S.; **Determining future needs through fiscal analysis,** 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.78-87.

Abstract: Briefly discusses how fiscal analysis can help communities determine future needs. The topics under which examples are discussed include growth alternatives, policy planning, site specific projects, zoning classifications, and financial management. A section is included on some of the limitations in fiscal evaluations. The article discusses how fiscal evaluations are being used by persons involved in planning, financial management, budgeting, engineering, and other disciplines in the public as well as private sectors.

Location: 01.

80.103

Tsurutani, Tateyuki; Kasahara, Yukata; Naniwada, M.; Nippon Electric Co. Ltd. Central Research Laboratories. **ATLAS: A geographic data base system - Data structure and language design for geographic information,** (in: Computer graphics, Vol.14, no.3) (at: SIGGRAPH '80 Conference Proceedings) 1980, July pp.71-77.

Abstract: The design concepts and languages of a geographic information system ATLAS (Administration and Total Landuse Analysis Support system) are proposed. The database structure is designed based on the geographic information structure concepts which contain semantic structure, topological structure and location structure. For a flexible user interface, the system provides two languages, IGL (Interactive Geographic Language) and GDDL (Geographic Data Definition Language), whose functions are designed based on the geographic information structure concepts. IGL is an interactive end user language, which facilitates information retrieval under geographic and/or statistic conditions and thematic map production. GDDL is a language for a system manager who constructs and maintains the database.

Location: 16.

80.104

Turner, A. Keith; Colorado School of Mines. Department of Geology. **GMAPS and GCARS: Terrain analysis and route selection systems,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.89.

Abstract: Slide presentation of the thematic mapping and terrain analysis programme systems GMAPS and its application is provided. Also included is a description of the GCARS System for route selection and its application to the location of a freeway.

Location: 01.

80.105

University of Guelph. School of Engineering. **Proceedings of the Seminar on Digital Terrain Models, Oct. 5,6,7, 1979, University of Guelph,** 126-50, 0318-3211, (University of Guelph) 1980.

Abstract: Contains papers dealing with such topics as geographic data bases, digital elevation models (DEM) and digital terrain models (DTM).

Location: 01.

80.106

Utano, Jack J.; University of Akron. Laboratory for Cartographic & Spatial Analysis. **Portfolio of computer mapping software at Akron University**, (at: Harvard Computer Graphics Week 1980).

Abstract: Provides a glimpse at the theoretical and operational aspects of a geographic computer mapping package (MAPSOFT) developed by the Laboratory for Cartographic and Spatial Analysis in the Geography Department at the University of Akron, Ohio, U.S.A.

Location: 17.

80.107

Wadsworth, William M.; **Fiscal cadastre: A practical approach**, (at: Harvard Computer. Graphics Week 1980).

Abstract: Identifies the requirements of a practical fiscal cadastre. Based on these requirements, the paper then describes existing appraisal, assessment and tax collection systems which combine to cost effectively meet these requirements.

Location: 17.

80.108

Walters, Ronald L.; COMARC Design Systems, San Francisco, CA.. **Comprehensive application of a geo-based information system on a region in Colorado**, 0-87262-243-6, (at: Planning and engineering interface with a modernized land data system. Proceedings of the Specialty Conference) (American Society of Civil Engineers) 1980 pp.71-76.

Abstract: Focuses on the original project which involved the preparation of a Water Quality Management Plan for which Comarc was selected as prime contractor. The study area covered some 9,100 square miles of diverse, sensitive landscape and resulted in a well respected Water Quality Management Plan, a Regional Comprehensive Plan, and an information system which is being used for a variety of other regional, county, and site-specific projects.

Location: 01.

80.109

Welin, R.A.; Nakamura, C.; City of Calgary. **Calgary's approach to computerized mapping**, (in: APWA reporter, Vol.47, no.4) 1980, Apr. pp.21-25.

Abstract: Describes the urban mapping programme of the City of Calgary and the development and use of computer mapping and interactive graphics in the mapping programme.

Location: 01.

80.110

White, L. Forrest; **Community wide use of interactive mapping**, 0196-6758, (at: Technical papers of the American Society of Photogrammetry ACSM-ASP Convention) (American Society of Photogrammetry) 1980 pp.234-237.

Abstract: National concern for the prevention of damage to underground utility networks lacing the urban communities caused the formation within the American Public Works Association (APWA) of the Utility Location and Coordination Council (ULOC) in 1973 to address the problems and opportunities for improving the flow of information about utility locations in each community as the growth goes forward. ULOC has completed a long series of projects with the latest being CAMRAS (Computer Assisted Mapping and Records Administration System) where the original scope was limited to the underground application of the geo-based mapping. The program now provides for joint-use planning, engineering, and management tools using Orthophotomapping and modern techniques of digital cartography and data processing in the interactive mode for more efficient public service. The objective is also to develop a comprehensive set of specifications which can be used by other communities to obtain an operating system which has been tested prior to procurement. The Common Digital Data Base will serve for years to come as an exemplary model of a comprehensive urban mapping and muncipal data management system.

Location: 40.

80.111

Whiteley, H.R.; University of Guelph. School of Engineering. **Applicability of digital terrain models to hydrological simulation,** 126-50, 0381-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.106-108 .

Abstract: Indicates the requirements necessary if digital terrain models are to be useful in hydrologic simulation.

80.112

Wildgen, John K.; Engstrom, Richard L.; University of New Orleans. Department of Political Science. **Computer graphics and political cartography: Aspex of gerrymandering,** (at: Harvard Computer Graphics Week 1980).

Abstract: Provides a definition of gerrymandering and argues that it can be both measurable and provable. Concentrates on the utility of computer graphics towards this development.

Location: 17.

80.113

Wilson, Paul M.; Association of Bay Area Governments, Berkeley, CA.. **Earthquake hazards mapping in the San Francisco Bay Region,** (at: Harvard Computer Graphics Week 1980).

Abstract: Discusses ABAG's (Association of Bay Governments) earthquake preparedness programme with reference to BASIS (Bay Area Information System). Stresses the usefulness of computer graphics in this application.

Location: 17.

80.114

Wong, Ed.; California Computer Products of Canada Limited. **Calcomp plotters,** 126-50, 0318-3211, (at: Proceedings of the Seminar on Digital Terrain Models) (University of Guelph. School of Engineering) 1980 pp.97-103.

Abstract: Relates a brief history of plotters and the general hardware presently available. Also provides an introduction to Calcomp and its products.

Location: 01.

80.115

Youngmann, Carl E.; The Morgan Fairchild Group, Seattle, WA.. **Portable geographic information systems for on-site data environmental data collection,** (at: Harvard Computer Graphics Week 1980).

Abstract: The portable geographic information system should contribute to improved wild lands management by providing simpler and more accurate means for collecting field data and by facilitating the incorporation of that information into natural habitat information systems. There are difficulties in the implementation of such a system in terms of acceptance by the field survey teams, and the operation and reliability of the system in the field. However, the need to survey large areas efficiently, the pressures to make management decisions, and the obligation to make these decisions on sound, scientific bases are realized by all involved.

Location: 17.

80.116

Ziegenfud, Dr. Robert C.; New Jersey. Department of Environmental Protection. Office of Cancer and Toxic Substances Research. **Application of computer mapping in depicting spatial and temporal components of cancer mortality,** (at: Harvard Computer Graphics Week 1980).

Abstract: Discusses specifically the procedures and programmes used to create the computer maps for the latest mortality report submitted to the office of cancer and Toxic substances Research in the State of New Jersey. The application of POLYVRT, SYMAP, SYMVU and CALFORM to the project is described.

Location: 17.

80.117

Computer helps scientists map Canada's northland: University of Calgary Surveying Engineer honored, (in: Computing Canada, Vol.6, no.3) 1980, Feb. pp.4-5.

Abstract: Discusses Space-M, a computer programme for photogrammetric adjustment of large numbers of independent stereoscopic models, which is able to use lake surfaces as levelling constraints for greater mapping accuracy and lower field work requirements.

Location: 01,06,24.

80.118

From month to minutes, (in: Canadian petroleum,) 1980, January pp.26-29.

Abstract: Concerns the automated mapping programme of the ERCB. Presents a system description and discussed the impact of automation in terms of economics, production speed and map revision.

Location: 01,02,05,12,19,20,21,23,24,25,26,27,28,34.

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81.001

Rhind, David W.; **Computer Processing and Mapping Requirements of the Ecological Mapping Community Project**, (Dept. of Geography, University of Durham) 1981.

81.002

Tamminen, M.; **Efficient Spatial Access to Data Base**, (Laboratory of Information Processing) 1981.

Abstract: A file organization scheme providing fast access to spatially referenced objects in a data base is presented. The method utilizes a geometric file organization based on extendible cells together with a topological representation of areas. It is shown to have 0(1) expected access cost for the "point-in-polygon-network-query" in typical situations. Alternative directory mechanisms suitable for other area representations are also analyses. Several performance indicators of the file organization scheme are reported on the basis of empirical tests.

81.003

Tamminen, M.; **Expected Performance of Some Cell Based File Organization Schemes**, (Laboratory of Information Processing) 1981.

Abstract: Cell based file organization schemes for efficient spatial access to data are analyzed. By considering a specific data generation model we derive closed formulas for the expected performance of so called fixed cell methods. Similarly, functional forms to describe the performance of so called extendible cell methods are derived. The two approaches are compared with each other and with projection methods. A new hybrid cell scheme is suggested on the basis of the analysis.

81.004

Tamminen, M.; **Management of Spatially Referenced Data**, (Laboratory of Information Processing Science) 1981.

Abstract: Management of spatially referenced data from an object oriented viewpoint aiming at a conceptual definition of the data contents and access requirements specific to geographical data are discussed. A conceptually simple data model is defined and the analysis of data base management is based on it. So called geographical data independence is proposed as one of the basic objectives. The external interface to spatially referenced data and internal access definition and optimization are discussed and general types of data base management systems briefly compared as solutions to the requirements. Finally a preliminary proposal for the structure of a specialized system is presented. The concepts are illustrated and tested by some geographical data processing tasks and data sets presented in the appendices.

81.005

Witiuk, Sid W.; Waugh, Thomas C.; Piamonte, K.E.; DeMello, L.S.H.; Boulogne, P.; **Report of the Continuing Working Group on Software Portability**, (Spatial Oriented Referencing Systems Association) 1981.

81.006

Cibula, W.G.; **Computer Implemented Land Cover Classification Using Landsat MSS Digital Data: A Cooperative Research Project Between the National Park Service and NASA. 3: Vegetation and Other land Cover Analysis of Shenandoah National Park,** (National Aeronautics and Space Administration, Earth Resources Lab.) 1981.

Abstract: Four LANDSAT frames, each corresponding to one of the four seasons were spectrally classified and processed using NASA-developed computer programs. One data set was selected or two or more data sets were merged to improve surface cover classifications. Selected areas representing each spectral class were chosen and transferred to USGS 1:62,500 topographic maps for field use. Ground truth data were gathered to verify the accuracy of the classifications. Acreages were computed for each of the land cover types. The application of elevational data to seasonal LANDSAT frames resulted in the separation of high elevation meadows (both with and without recently emergent perennial vegetation) as well as areas in oak forests which have an evergreen understory as opposed to other areas which do not.

81.007

Canada. National Research Council. **Federal Surveying and Mapping: An Organizational Review,** (National Research Council) 1981.

Abstract: Mapping, charting, geodesy, and surveying are fundamental services and support programs that underlie practically every national endeavor, beginning with the exploration ownership, and development of the lands, seas, and airspace and their resources. Meeting the increasing requirements for more accurate and up-to-date maps, charts, surveys, and land-related information is critical for the various uses of resources and for the national defense.

81.008

Mettauer, Jack C.; Regis College Research Center. **Projects in Computer Aided Climatology,** (Air Force Geophysics Lab.) 1981.

Abstract: The detailed development of two climatological data bases are presented. The first is a photographic sky cover data base from Columbia, Missouri consisting of the Regis College Research Center's interpretations of over 2800 photographs of the whole sky. It also contains point information taken from the photographs and concurrent NWS sky cover observational information. An analysis of the content of the data base, the derivation of sky cover frequency density relations, a comparison of other data from ETAC-USAF observations and an interval consistency study are included in this subsection. A second data base is taken from radar echo observations gathered from seventeen stations around the USA for a period of three years. The informational content of this data base is also summarized. The second half is a description of an interactive computer geopolitical mapping system of data displayed on the entire globe or regions of it. It is based on the Lambert azimuthal equal area projection. Development of the system, including coordinate systems, the equations of projection, and contour/map production, is discussed in detail. The emphasis is to explore means of bringing the power of modern computing facilities to bear on the problems of climatology.

81.009

Wescott, Thomas F.; Dallam, William C.; Peterson, Christopher J.; General Electric Co.. **Interactive Digital Image Processing for Terrain Data Extraction,** (Army Engineer Topographic Labs.) 1981.

Abstract: The phase 2 of an experimental study has been performed to investigate the feasibility and use of man-machine interactive digital image processing techniques when applied to the extraction of terrain analysis data from aerial imagery. This phase of the study concentrated on applying techniques to extract water resources data elements and on the development and coding of software and algorithms. The developed software and algorithms, pertained to filtering of themes, and image scaling. Two digital processing techniques to "skeletonize" features, best mapped as lines, were established and tested with limited success. Relative to water resources data elements, success was achieved in the extraction of alignment of watercourses and shore line alignment of watercourses of water bodies. Partial success was achieved with the elements of delineation of wet areas and the identification of terminal points of watercourse segments. Image processing techniques for the extraction of areas subject to flooding and for the measurement of bank heights were not practical with the existing software. The development/implementation of software, and the processing and analysis of imagery was conducted at the General Electric Digital Image Analysis Laboratory. (Author)

81.010

Swain, P.H.; Purdue University. **Key Issues in the Analysis of Remote Sensing Data: A Report on the Workshop,** (at: Workshop Held in West Lafayette, USA) (National Aeronautics and Space Administration) 1981.

Abstract: The procedures of a workshop assessing the state of the art of machine analysis of remotely sensed data are summarized. Areas discussed were: data bases, image registration, image preprocessing operation, map oriented consideration, advanced digital system, artificial intelligence methods, image classification, and improved classifier training. Recommendations of areas for further research are presented.

81.011

Roberts, P.A.; Royal Aircraft Establishment. **Transformation of Data into a Raster-Scan Format and Some Image Processing Applications,** (Defence Research Information Centre) 1981.

Abstract: An account is given of techniques that can be used to process and manipulate data that is in the form of either a series of contours or a set of unconnected points, so that it can be transformed into a digital raster-scan format. Two applications of this work are described; these are the deliberate degradation in the spatial resolution of contour maps and the use of terrain height information in conjunction with Landsat imagery. In the discussion of both these topics reference is made to programs available at the Remote Sensing Unit of Space Department, RAE. (Author)

81.012

Crane, Robert K.; Environmental Research and Technology, Inc.. **Mini Raster-to-Vector Conversion,** (Army Engineer Topographic Labs) 1981.

Abstract: A raster-to-vector conversion program was developed for the Defense Mapping Agency (DMA). The program operates on run length coded data from a SCI-TEX scanner. It operates in a 16-bit Digital Equipment Corporation PDP 11/60 minicomputer with limited core storage, less than 64 k-bytes. The program was tested and timed using data supplied by DMA. It vectorized 4879.8 linear inches of contour data in 1.19 hours at 0.005 inch resolution and 1.14 hours at 0.010 inch resolution. The program also developed a number of attributes and contour intersection directories useful for automated editing of the vector data. (Author)

81.013

Alspaugh, Dale W.; Hallum, III, Maurice M.; **User's Manual for CONTUR. A Contour Plotting Package,** (Army Missile Command) 1981.

Abstract: A program is developed which accepts arrays of X, Y, and Z coordinates as inputs and generates contours of constant values of Z. The present version is prepared for the Perkin-Elmer Interdata 8/32. The subroutines can be adapted to any other computer installation having graphics capability. The required changes are outlined in a section of the report. (Author)

81.014

Clark, David W.; Przewlocki, Kathryn Sands; Sands Measurement Concept Corp.. **Raster Scanned Character Recognition (RSCR),** (Rome Air Development Center) 1981.

Abstract: The objective of the RSCR was to design and implement a software system which produces bathymetric depth sounding information for input to a digital data base. Input to the RSCR is raster scanned smooth sheets which consist of handwritten depth soundings. The RSCR system includes software to: (1) isolate smooth sheet hand drafted numeric depth soundings from raster scanned input, (2) provide isolated characters to a character recognition routine, and (3) construct and locate output depth soundings in digital format for subsequent use by the Defense Mapping Agency Hydrographic/Topographic Centre (DMAHTC). The Hand-printed Symbol Recognition (HSR) software developed by Computer Sciences Corp and the Naval Ocean Research and Development Activity (NORDA) is the character recognition routine used. This report documents all of the above mentioned capabilities except the HSR software itself which has been documented separately by CSC and NORDA.

81.015

Nevatia, Ramakant; Sawchuk, Alexander A.; **Image Understanding Research,** (University of Southern California) 1981.

Abstract: This technical report summarizes the image understanding and VLSI system research activities performed by the University of Southern California and the Hughes Research Laboratories during 1 April 1981 through 30 September 1981 under contract number F-33615-80-C-1080 with the Defense Advanced Research Projects Agency, Information Processing Techniques Office. The purpose of this research is to develop techniques and systems for understanding images, particularly for mapping applications. The research activity includes low level image analysis and feature extraction, statistical and structural textures analysis, symbolic image representations, and image to map correspondence using relational structures. Additional activity is concerned with VLSI architectures for implementation of image analysis and image understanding operations.

81.016

Lee, Michael P.; **Automated Slope Generation Using Raster Technology,** (Defense Mapping Agency Hydrographic/Topographic Center) 1981.

Abstract: The Sci-Tex Response 250 Mapping system has been in production at the Defense Mapping Agency Hydrographic/Topographic Center (DMAHTC) for the past two years. Initially acquired for foreign chart modification and color separation, this cartographic system has had a significant impact in rapid response situations. Recent gains in slope generation have further enhanced the capabilities of this automated tool. (Author)

81.017

Faintich, Marshall B.; **Matrix Data Analysis: Color/B&W Coding is not Always Enough,** (Defense Mapping Agency Aerospace Center) 1981.

Abstract: The Defense Mapping Agency produces digital data bases that describe the physical appearance of the surface of the earth. These data bases include, but are not limited to, terrain elevation, culture including landscape characteristics, and vertical features. This data is collected from digitized source maps, from optically or digitally correlated stereopairs of photographic imagery, and from digital multi-spectral sensor data. A dramatic impact has been made in the ability to analyze these digital data bases by applying state-of-the-art digital image technology processing and display concepts. These include a variety of color and/or black and white displays of not only intensity/color coded matrix data, but also image processed data using specialized convolution filters, texture discrimination, and special color representation techniques. In addition, computer generated imagery from these data bases serve as a final analysis tool. (Author)

81.018

Ingram, Jeff R.; Simms, Robert A.; **CIMS: The Cartographic Information Management System,** (Defense Mapping Agency Inter American Geodetic Survey) 1981.

Abstract: The system described in this paper is a small microcomputer system being developed for the cataloging of graphical and nongraphical cartographic data describing the sources available and/or used in constructing maps and charts. The system is envisioned as a useful method to cartographic managers for reviewing sources belonging to an agency and determining what sources to use in a new or revised map product. (Author)

81.019

Norvelle, F. Raye; **Interactive Digital Correlation Techniques for Automatic Compilation of Elevation Data,** (Army Engineer Topographic Labs.) 1981.

Abstract: A program using digital correlation techniques has been implemented on the Digital Image Analysis Laboratory (DIAL) to automatically extract elevation type data from stereoscopic pairs of digital images. The DIAL permits the operator to view on a display unit the stereoscopic model and the computed match-point coordinates in 3-D using anaglyphic techniques. The match points are presented as 3-D profiles superimposed over the 3-D terrain model and consequently the operators can [illegible] the compilation process, detect errors as soon as they occur, and inter[illegible] with the process to prevent the accumulation of error or to tune the parameters as conditions warrant. The program is described in terms of the hardware used, the algorithm, the operating procedures, and an example of a compiled area. (Author)

81.020

Decker, J.; Newman, M.; Synectics Corp.. **IAF Geographic Data Processing System,** (Rome Air Development Center) 1981.

Abstract: The objective of this report was to design and develop a comprehensive digital landmass system (DLMS) digitizing/processing system and a DLMS processing support subsystem to acquire and organize terrain and planimetric data into a common digital landmass data bank. The project maintained a twofold purpose. The first was to identify the best hardware and software components and integrate them into an efficient cartographic digitizing and editing subsystem aimed at supporting the creation of digital cartographic feature files. These files were sufficiently described to permit subsequent processing of the data to digital landmass simulation products. The other purpose was to provide a subsystem with state-of-the-art technology and proven concepts to support the processing of digital cartographic files for generating digital landmass system products. The two functional areas of the GDPS (Data Acquisition and Validation and Post-Processing in Support of Product Generation) have specific data processing requirements. These requirements (graphic data handling in a highly interactive procedure environment and large amounts of mass storage and computation time) demand a responsive hardware configuration plus a user-oriented software architecture.

81.021

Grosso, Patrick F.; Tarnowski, Andrew A.; Image Graphics, Inc.. **A Cartographic Electron Beam Scanner Design Study,** (Army Engineer Topographic Labs.) 1981.

Abstract: The feasibility of adding a scanning/readout capability to Cartographic Electron Beam Recorder System was successfully demonstrated. An electron beam scanning mode of operation would allow cartographic line and gray shade data recorded on film to be rapidly digitized using a high resolution scanning electron beam. Further engineering programs are recommended to develop this capability. (Author)

81.022

Kraft, Robert N.; Buede, Dennis M.; Patterson, John F.; **The Design of a Multimedia Map-Store/Surrogate Travel Information System**, (Decisions and Designs, Inc.) 1981.

Abstract: This report describes the effort to design the software and hardware capabilities of a videodisc mapping and surrogate travel system and to select the various sites to be incorporated into this system. Experts from DARPA's Cybernetics Technology Division and from Interactive Television Corporation (ITC) worked with decision analysts from Decisions and Designs, Inc. (DDI) to extend and elaborate the electronic surrogate travel concept previously developed and demonstrated by DARPA. The general problem was to develop a simple yet innovative conceptual design for a map-store/surrogate travel information system. Such a system must be capable of storing, indexing, and retrieving a wide range of visual and linguistic data, such as maps; aerial attache, and underwater photography; sequences of shots for surrogate travel; plans and blueprints of key installations; instructional manuals; movies; critical auditory information; panoramas; piloting charts of coasts and harbors; and specialized chart maps indicating the distribution of population, industry, wealth, and vegetation, among others. Design of the map-store/surrogate travel system and selection of the sites was accomplished through a sequence of three one-day working sessions. The first two sessions were devoted to developing a full range of feasible software and hardware options for the system; developing a set of criteria to determine the sources and kinds of data to be included in the system; and enhancing the man-machine interaction and demonstrability of the system.

81.023

Spies, K.P.; Paulson, S.J.; **TOPOG: A Computerized Worldwide Terrain Elevation Data Base Generation and Retrieval System**, (National Telecommunications and Information Administration) 1981.

Abstract: TOPOG is a computerized worldwide terrain elevation data base generation and retrieval system. It consists of software to generate TOPOG tapes from Defense Mapping Agency (DMA) standard terrain elevation data tapes, to create auxiliary random-access disk files containing TOPOG data for a user-defined area, and to extract path profiles from the auxiliary disk files. The data base and software are designed for a CDC 6000 series computer with a NOS or NOS/BE operating system.

81.024

Lawson, Thomas J.; Andrulis Research Corp., **Automatic Cartographic Feature Identification**, (Rome Air Development Center) 1981.

Abstract: The objective of the study efforts presented in this report was to identify and test automatic identification techniques whereby descriptor data is entered into the digital record for selected features and additional descriptor data for given sets of features is derived by computational techniques. This study was divided into three phases. In the first phase, general background and knowledge of the problems was gained, and potential solutions were identified. This was accomplished by site visits to DMA facilities, literature review, and discussions with experts in cartography and related areas. Section 2 of the report discusses this phase in greater detail. The second phase was concerned with experimental testing of techniques identified as having the greatest potential payoff. Section 3 of the report details the experiments conducted, their significance and recommended further testing in these areas. Section 4 contains more detail on suggested further research based upon the experimental results. The third and final phase was concerned with the development of a conceptual integrated system for the digital processing of cartographic data. Section 5 presents Andrulis' general concepts for the design of such a system. (Author)

81.025

Bradley, D. Ross; **Computer Assisted Collection Maps for the 1981 Census of Canada,** (at: Seminar on the State and utility of computer assisted map and chart production) (National Advisory Committee on Control Surveys and Mapping) 1981.

Abstract: A brief summary of a study on the feasibility of producing collection maps by computer-assisted means. Results appear sufficiently encouraging that a production system will be developed to produce maps for the next census.

81.026

Kjolberg, T.; **Advances in computer-aided cartography: A Norwegian research program on mapping and handling of spatial data,** 1981.

81.027

Openshaw, S.; **A suite of FORTRAN programs for classifying individual census data or other very large data sets with nominal measurement scales,** (Department of Town and Country Planning, Newcastle University).

Abstract: A suite of FORTRAN IV programs are described which are capable of classifying very large data sets. The programs generate hierarchical monothetic divisive classifications with an option for polythetic relocation. They are currently specific to IBM computers but the modifications necessary for other machines are relatively minor.

81.028

Tamminen, M.; **Hidden Lines Using the EXCELL Method,** (Laboratory of Information Processing) 1981.

Abstract: The extendible cell (EXCELL) method provides a data structure for efficient coordinate based access. It stores geometric data into computer storage blocks corresponding to disjoint variable sized rectangular cells accessible by an address calculation type directory. Two efficient hidden line algorithms utilizing an EXCELL structure and operating satisfactorily even if central memor is small compared to the total amount of data are presented. The computation time is shown to be approximately proportional to the amount of input. The programs are contained within a general purpose graphics system and require only graphical data.

81.029

Tamminen, M.; **The Extendible Cell Method for Closest Point Problems,** (Laboratory of Information Processing) 1981.

Abstract: The extendible cell method is an application of order preserving extendible hashing to multidimensional point files. Some performance characteristics are derived and expected case optimality for closest point problems is shown.

81.030

Witiuk, Sid W.; **The Impact of Automation: Models and Scenarios for Controlled Change,** (at: Eighth European Symposium on Urban Data Management at Oslo, Norway) 1981 pp.1-10.

81.031

Witiuk, Sid W.; **The Canadian Forestry Inventory Mapping Project,** (at: Workshop on Automated Mapping for Forest Inventory) (Canadian Forest Inventory Committee) 1981.

Abstract: The Canadian Forestry Inventory Mapping project is part of a larger project sponsored by the Forestry Statistics and Sytems Branch of the Canadian Forestry Service to develop the Canadian Forest Resource Data System (CFRDS). The CFRDS project includes four stages, the first three of which are now underway at the Petawawa National Forestry Institute. They include: the collection and classification of the forestry data by summary units from provincial forestry agencies across Canada; the integration of this data with data prepared for federal lands, and the manipulation of the data base using CFRDS to generate tabular and magnetic tape output of data for analysis and mapping. The fourth stage being done under contract by the Geocartographics Sub-Division at Statistics Canada, is currently in its second year and includes the preparation of a geographical data base of some 50,000 forestry data variables. The focus of this paper is on the processes and systems used by the Geocartographics Sub-Division to create this digital data base of forestry cells and to produce analytical and publication quality maps of forestry inventory data.

81.032

Dejesusparada, N.; Alburquerque, P.C.G.; Instituto de Pesquisas Espaciais, SAO JOSE Dos Campos (Brazil). **Utilization of LANDSAT Images in Cartography (Utilizacao de Imagens LANDSAT NA Cartografia),** (National Aeronautics and Space Administration) 1981.

Abstract: The use of multispectral imagery obtained from LANDSAT for mapping purposes is discussed with emphasis on geometric rectification, image resolution, and systematic topographic mapping. A method is given for constructing 1:250,000 scale maps. The limitations for satellite cartography are examined.

81.033

Crombie, Michael A.; Baracat, William A.; **Applying Photogrammetry to Real Time Collection of Digital Image Data,** (Army Engineer Topographic Labs) 1981.

Abstract: The practicality of converting digital and stereo image data into terrain elevation data in real time is investigated. Results indicated that the real time collection of elevation data using epipolar correlation methods is not feasible. It is shown that real time mensuration of 7-parallax can be used as a means to help maintain a desired relative orientation in a variety of digital collection systems. (Author)

81.034

Lavine, David; Lambird, Barbara A.; Kanal, Laveen N.; L.N.K. Corporation, Silver Spring, MD.. **Analysis and Simulation of Discrete Digital Image Matching,** (Army Engineer Topographic Labs) 1981.

Abstract: This report evaluates procedures for the approximate registration of digital images to maps and other images. It emphasizes point features and vectors derived from point features for image registration. Labeling and other means of adding definiteness to feature identification are promoted as ways to speed up registration. Clustering algorithms, distribution and type of features, hierarchical matching techniques, and other procedures investigated with scene and map simulations. (Author)

81.035

Lukes, George E.; **Computer-Assisted Photo Interpretation Research at USAETL,** (Army Engineer Topographic Labs) 1981.

Abstract: A program in computer-assisted photo interpretation research (CAPIR) has been initiated at the U.S. Army Engineer Topographic Laboratories. In a new laboratory, a photo interpreter (PI) analyzing high-resolution, aerial photography interfaces directly to a digital computer and geographic information system (GIS). A modified analytical plotter enables the PI to transmit encoded three-dimensional spatial data from the stereomodel to the computer. Computer-generated graphics are displayed in the stereomodel for direct feedback of digital spatial data to the PI. Initial CAPIR capabilities include point positioning, mensuration, stereoscopic area search, GIS creation and playback, and elevation data extraction. New capabilities under development include stereographic superposition, a digital image workstation, and integration of panoramic Optical Bar Camera photography as a primary GIS data source. This project has been conceived as an evolutionary approach to the digital cartographic feature extraction problem. As a working feature extraction system, the CAPIR laboratory can serve as a testbed for new concepts emerging from image understanding and knowledge-based systems research. (Author)

81.036

Benny, A.H.; Royal Aircraft Establishment. **Automatic Relocation of Ground Control Points in Landsat Imagery,** (Defence Research Information Center) 1981.

Abstract: Images obtained from the Landsat multispectral scanner are not provided in any normally recognized map projection system, so it is often necessary for a transformation to be made. This is usually done with the aid of ground control points, whose locations on the ground (or on a map) are accurately known and which can be accurately located within Landsat images. The initial selection and location of such ground control points is usually performed manually. For repeat - i.e. multitemporal - imagery, the same ground control points can be used. The positions of these points can be relocated within the repeat image either manually or, as described in this paper, by an almost entirely automatic computer process. This process has been found to work speedily and effectively on many repeat images of Britain, usually giving accurate relocation of well over 90% of ground control points. The process has been developed for use with images of Britain, but it could readily be adapted for worldwide use. (Author)

81.037

Amidon, E.L.; Dye, E. Joyce; **SCANIT: Centralized Digitizing of Forest Resource Maps or Photographs,** (Pacific Southwest Forest and Range Experiment Station) 1981.

Abstract: Spatial data on wildland resource maps and aerial photographs can be analyzed by computer after digitizing. SCANIT is a computerized system for encoding such data in digital form. The system, consisting of a collection of computer programs and subroutines, provides a powerful and versatile tool for a variety of resource analyses. SCANIT can also be converted esily to another computer system. As a highly automated system, SCANIT requires a substantial investment in specialized instruments and assumes a central facility with a raster scanner and a minicomputer to serve many users. The systems designers, by adopting a highly interactive approach to the control of the data processing, have provided for persons with little or no computer experience to use the system and have minimized the need for a user manual. This report on SCANIT is designed to aid the maintenance programmer locate needed information easily and to assure an adequate level of documentation for each routine.

81.038

Kottman, Clifford A.; **Some Automated Cartography Developments at the Defense Mapping Agency,** (Defense Mapping Agency Hydrographic/Topographic Center) 1981.

Abstract: The first steps toward an automated cartographic capability at DMA were taken to relieve the burden of manual scribing and drafting. Thus, the focus was on the automatic plotting of grids and projections, and later, on the digitization and tagging of line work, its digital manipulation, and its automatic plotting or scribing in a symbolized format. The present capability includes many photogrammetric, graphic and hybrid techniques to capture cartographic and topographic information in a digital format directly from aerial photography or existing topographic maps. The emphasis today is upon the processing of such data into large data bases of elevations, cultural and natural features, and place names. The developments which will demand careful attention in the next decade are twofold. First, the structure and scope of the data bases will expand so that they may fully support topographic mapping, hydrographic charting, and special activity graphics. Second, systems will be developed to quickly exploit these data bases for the generation of both special and general purpose products in both graphic and digital formats. (Author)

81.039

Hawk, James R.; **Photogrammetry Software. A Package for Everyone,** (Defense Mapping Agency Inter American Geodetic Survey) 1981.

Abstract: An example of photogrammetry software is presented for consideration. The system is being implemented throughout Latin America by IAGS. It includes both analytical and semi-analytical adjustments. It is a simplistic yet versatile system which has proven very successful. (Author)

81.040

Taylor, Cyrus C.; **Shaded Relief Images for Cartographic Applications,** (Army Engineer Topographic Labs.) 1981.

Abstract: The computer generation of shaded relief images for cartographic applications is analyzed. The geometric theory of image formation is presented in some detail, and is used to motivate the discussion of image simulation algorithms developed at the U.S. Army Engineer Topographic Laboratories (ETL). Several algorithms devised to address specific cartographic problems, such as variable sun angle, haze simulation, and relief contour algorithms, are also discussed. The successful implementation of these algorithms is described. Appendixes summarizing details of the theory are included, as are a Software User's Guide, sample images, and listings of the ETL software. (Author)

81.041

Grosso, Patrick F.; Tarnowski, Andrew A.; Image Graphics, Inc.. **Recording and Scanning Advances in Cartographic EBR Systems,** (Army Engineer Topographic Labs.) 1981.

Abstract: The experimental model Cartographic EBR System developed for USAETL in 1977 was modified to include a number of advance hardware and software features: a Symbol/Vector Generator for plotting cartogrphic and names data; a Raster Scan Translator for recording continuous tone images; a scanning capability; a multiformal and size control; and other improvements. (Author)

81.042

National Technical Information Service. **A Directory of Computer Software Applications. Natural Resources and Earth Sciences,** (National Technical Information Service) 1981.

Abstract: Natural resource and earth science reports that list computer programs and/or their documentation are cited. These software applications pertain to topics such as mining, hydrology, soil and rock properties, earthquake modeling, forestry, remote sensing, cartography, geophysics, coastal zone management, and geothermal systems. The directory contains complete bibliographic data for each report as well as a subject and a corporate author index. Over 250 reports are cited.

81.043

Hunt, B.R.; Arizona Univ., Digital Image Analysis Lab.. **Automatic Methods in Image Processing and Their Relevance to Map-Making,** (Army Research Office) 1981.

Abstract: The behavior of digital cross-correlation algorithms as applied to image matching problems is examined in terms of the relationship between measurable image properties and algorithm characteristics. Statistical image quality measures are developed which could be employed in a preprocessor to predict the performance of automatic stereo-compilation equipment. The measures include quantity derived from the Cramer-Rao lower bound on the variance of any unbiased parameter estimator, various contrast measures such as variance, contrast modulation, and median absolute deviation, and a stationarity detector related to the variance gradient. These measures are based on image and correlator models which describe the behavior of correlation processors under conditions of low image contrast or signal-to-noise ratio, geometric distortion, and image non-stationarity. Computer simulations using synthetic imagery were performed to verify the various models, and indicate the potential for the use of image quality measures in the predicting of correlation behavior. Implications of the models in terms of correlation processor design and implementation are discussed. (Author)

81.044

Itek Corp., Optical Systems Div.. **Conceptual Design of an Automated Mapping Satellite System (MAPSAT),** (Itek Corp.) 1981.

Abstract: Mapsat is a new concept for mapping and monitoring the Earth's surface from space. Elevation data are obtained from the use of the epipolar-plane condition in space. This greatly simplifies the mapping problem by permitting the automated processing of stereo data into digital elevation data. Multicolored image maps at 1:50,000 scale with 20-m contours are indicative of the products which are within the capability of the Mapsat system. Mapsat would provide continuity with respect to Landsats 1-3, including the same basic data transmission system.

81.045

Park, Archibald B.; **Data Base Requirements in Support of Crop Models,** (at: Remote Sensing of Env. 15th Intl. Symposium at Michigan) (General Electric Co.) 1981.

Abstract: In the development of a crop data base and crop models, all combinations of the crop and its environment must be considered. Input requirements of such a data base are identified. Data collected on crop area, cropping pattern, calendars, varieties, yield, water culture, fertilizer, plant pests, and soil are discussed.

81.046

Dumanski, J.; Stewart, R.B.; **Crop Production Potentials for Land Evaluation in Canada,** (Agriculture Canada) 1981.

Abstract: A method is presented for estimating crop yield and production potentials for spring wheat, corn, soybean, phaseolus bean, and potato in Canada - the procedure involves developing a large integrated data base of soils, climate, and agricultural land use. Results are expressed as a quantitative land suitability assessment of the six crops on a provincial basis. Analysis shows a sizeable residual potential for spring wheat in the prairie provinces, and for corn, soybean, and phaseolus bean in Ontario.

81.047

Miller, William J.; Silka, Lyle R.; **Application of Computer Modeling for the Investigation of Ground-Water Contamination,** (at: Applied Research & Practice on Municipal & Indust. Waste 4th Conference at Madison WI) (Geotrans VA, USA) 1981.

Abstract: The use of computer modeling in solving complicated groundwater problems is discussed. Models are among several techniques available to the hydrogeologist for investigation and clean-up of contaminated areas. Sitespecific modeling can be implemented to interpret the groundwater regime, design a monitoring plan, and analyze aquifer tests. Groundwater modeling is suited for predicting the movement of chemicals in groundwater.

81.048

Desteiguer, J.E.; Giles, R.H.; **Introduction to Computerized Land-Information Systems (En)**, (in: Journal of Forestry, Vol.79, no.11) 1981 pp.734-737.

81.049

Ozernoy, V.M.; Smith, D.R.; Sicherman, A.; **Evaluating Computerized Geographic Information-Systems Using Decision-Analysis**, (in: Interfaces, Vol.11, no.5) (Woodward Clyde Consultants) 1981 pp.92-100.

81.050

MacDougall, E.B.; **Harvard Papers on Geographic Information Systems**, (in: Environment & Planning A, Vol.13, no.5) (at: 1st Int'l Advanced Study Symposium on Topological Data-Structures for Geographic Information-Systems - Dutton, G (En) no) (Univ. Massachusetts, Dept. Landscape Architecture & Reg. Planning) 1981 pp.650-651.

81.051

Milne, W.J.; **A Framework for the Investigation of a Spatial Data-Base (En)**, (in: Computer Journal, Vol.24, no.1) (Univ. E. Anglia, Sch. Comp. Studies) 1981 pp.52-55.

81.052

Hidlebaugh, Allen R.; **Soil Conservation Service's Interest in Geographic Information Systems**, (in: Comput Environ Urban Syst, Vol.7, no.4) (USDA, Soil Conservation Service) 1981 pp.295-300.

Abstract: The Soil Conservation Service (SCS) has used two computer mapping and analysis systems in in-house projects: one polygon, one grid. They include the System (MIADS II). Both have shown strengths and weaknesses. Cooperative efforts with other organizations have also been useful in defining the characteristics of the more efficient system which SCS hopes to develop. Users inside and outside SCS could benefit.

81.053

Schmitt, Rolf R., Ed.; Smolin, Harlan; **Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses**, (at: Annual Conf. of the Urban and Ref. Info. Systems Assoc. at New Orleans, LA, USA.) (Urban & Regional Information Systems Assoc.) 1981.

Abstract: This conference proceedings contains 34 papers. The sessions include: policy issues and technological developments; user needs and perspectives; data resources and access; methods of data analysis and definition; geoprocessing; land use monitoring and evaluation systems; and natural resource systems. Several papers discuss environmental data bases; environmental assessment techniques; regional employment centers; technical transfer in local government; land record systems; land use surveillance; fiscal impact analysis; obtaining maps and data; electronic funds transfer; video support systems; human services reporting systems; public libraries; local government data sharing; and community information systems. Technical and professional papers from this conference are indexed with the conference code no. 02140 in the Ei Engineering Meetings (TM) database produced by Engineering Information, Inc.

81.054

Hansen, E.J.; **Automated Mapping and Utility System,** (in: Teleteknik (Engl Ed), Vol.25, no.1-2) (JTAS) 1981 pp.43-49.

Abstract: Every year it costs the community large sums that contractors and other excavators cannot easily ascertain the exact location of the individual supply systems. This results in burst water pipes, leaky gas conduits and torn telephone cables. Common line indexes introduce a probable method to decrease these costs via computer graphics. A graphic computer system is presented, and the possibilities offered by such a system when working with maps and supply systems are described.

81.055

Rockwood, Alyn P.; Jensen, Thomas W.; **Two Aspects of Domain Designing C $infinity$ Curve Rendering and Blended Map Projections,** (in: Comput. Graphics (ACM), Vol.15, no.3) (at: SIGGRAPH 81 Conference Proc., Dallas, Texas USA) (Evans & Sutherland Comput. Corp.) 1981, August pp.233-242.

Abstract: A new research direction is presented in D. Shepard's method and a new application to computer graphics is given. In the first, the convex weighting functions are generalized by the creation of a user-defined mathematical domain which is independent of the surface. In the second, the original formula is applied to blend mapping projections for aviation visual simulation and an algorithm for rapid evaluation is presented.

81.056

Anon; American Congress on Surveying and Mapping. **Technical Papers of the American Congress on Surveying and Mapping, 41st Annual Mtg, 1981,** (at: American Congress on Surv. & Mapp 41st in Washinton DC) (American Congress on Surveying and Mapping) 1981.

Abstract: The volume contains 71 papers and abstracts of papers presented at the meeting; 48 of the papers are indexed separately. Subjects covered include testing vertical accuracy of topographic maps, photogrammetry applications in mapping, triangulation and surveying, horizontal control marine surveying radar video map, bathymetric data reduction, surveying instruments, education for surveyors and for cartographers, geographic positioning, tidal datums, remote sensing, astro-azsmuth observations, data base systems, computer graphics, orthomapping, retracement surveys, and others.

81.057

Evatt, B. Jr.; Schneider, J.B.; Polissar, L.; Francis, A.; **Flowmap: An Interactive Graphic Mapping Program for Displaying Patient Origin-Destination Patterns in Space and Time,** (at: Fifth Annual Symposium on Computer Applications in Medical Care) (Urban Transportation Program) 1981 pp.xxvi-1164.

Abstract: The design and use of an interactive graphics computer program called flowmap is described. Flowmap allows the interactive design of flowmaps at a graphics terminal using patient origin-destination data. The user has several options available that allow changes in the maps to be made quickly and easily to aid their comprehensibility. Several results from using the options are illustrated. Instructions for preparing the input data in using the program are also included. As are specific hardware and software requirements. Data representing the origindestination attributes of 34000 cancer patients in 13 countries in the western part of the State of Washington over the 1974-1978 time period are used to illustrate the capabilities of flowmap.

81.058

Wismath, S.K.; Soong, H.P.; Akl, S.G.; **Feature Selection by Interactive Clustering,** (in: Pattern Recognition (GB), Vol.14, no.1-6) (at: 1980 Conference on Pattern Recognition at Oxford, England) (Dept. of Computer and Information Science, Queen's University) 1981 pp.75-80.

> **Abstract:** The results of experiments with a novel criterion for absolute nonparametric feature selection are reported. The basic idea of the new technique involoves the use of computer graphics and the human pattern recognition ability to interactively choose a number of features. This number not being necessarily determined in advance from a larger set of measurements The triangulation method, recently proposed in the cluster analysis literature for mapping points from L-space to 2-space, is used to yield a simple and efficient algorithm for feature selection by interactive clustering. It is shown that a subset of features can thus be chosen which allows a significant reduction in storage and time while still keeping the probability of error in classification within reasonable bounds.

81.059

Fuchs, H; Poulton, J.; **Pixel-planes: A VLSI-Oriented Design for 3-D Raster Graphics,** (at: 7th Canadian Man-Computer Communications Conference at Waterloo ON, Canada) (Canadian Man-Computer Comm. Society) 1981.

> **Abstract:** Presents the design for a machine which can rapidly generate realistic continuous-tone color video images of three dimensional objects from a polygonal data base. The design consists of an array of identical custom LSI chips which form a pixel-mapped image buffer enhanced with certain processing capabilities. Visibility calculations are performed concurrently for all pixels using a depth buffer algorithm, and for a P-sided polygon, O(P) processing steps are required. The same circuitry which performs visibility calculations also carries out polygon edge definition and smooth shading, and requires only a small part of each pixel's memory area on the chip. Processing time for a single polygon is independent of its size and orientation; convex polygons with any number of vertices can be processed. The expected speed of the system to generate a smooth-shaded solid modeled image should equal that of currently-available caligraphic systems drawing stick figures; to generate images at this rate, our system must complete a one bit addition in 250 NSEC, a speed easily obtainable with current MNOS processes.

81.060

De Floriani, L.; Dettori, G.; Falcidieno, B.; Pienovi, C.; **A Graphical System for Geographical Data Processing in a MiniComputer Environment,** (in: Signal Process. (Netherlands), Vol.3, no.3) (Instituto per la Matematica Applicata, CNR) 1981, July pp.253-257.

> **Abstract:** A minicomputer system for geographical data processing for computer cartography applications is described. The main features of the system are: capability of processing irregularly distributed data points; interactive facility during the editing and map refinement steps; modular organization; use of minicomputer systems with standard display devices. At present the system is used to produce isarithmic maps for nautical applications.

81.061

Daily, M.; **Geology and Image Processing,** (at: Design of Digital Image Process. Systems at San Diegos CA) (Jet Propulsion Lab., California Inst. of Technol.) 1981 pp.9-12.

> **Abstract:** The design of digital image processing systems for geological applications will be driven by the nature and complexity of the intended use, by the types and quantities of data, and by systems considerations. Image processing will be integrated with geographic information systems (GIS) and data base management systems (DBMS). Dense multiband data sets from radar and multispectral scanners (MSS) will tax memory, bus, and processor architectures.

Array processors and dedicated-function chips (VLSI/VHSIC) will allow the routing use of FFT and classification algorithms. As this geoprocessing capability becomes available to a larger segment of the geological community, user friendliness and smooth interaction will become a major concern.

81.062

Poitevin, C.; Inst. Geographique Nat.. **Preliminary Studies to Implement a Levelling Data Base,** (at: International Symposium on Management of Geodetic Data) (Geodetic Inst. ; Internat. Assoc. Geodesy; et al) 1981 pp.420-432.

Abstract: Preliminary studies have been made at the National Geographical Institute of Belgium in order to implement the National Levelling data base. The author discusses the three following main points: general organization of the work during the implementation; a digital data acquisition system for the levelling; and a translator system for description of the stations in four different languages.

81.063

Chow, L.R.; Lin, S.Y.; Graduate School of Information ENGNG., Tamkang Univ.. **The Preliminary Design of an Automated Chinese Land Administrative Information System-CLAIS,** (at: Convention Informatique 1981. The Means of Computerization) (Convention Informatique) 1981 pp.389-398.

Abstract: Presents a preliminary result on the design of a management information system with input/output in Chinese for the land data governed by Taipei city government. The design of this automated land administrative system was carried out by employing the total data base management system and the Chinese computer system developed by Taiwan Automation Company. This system can be operated either in batch mode or in on-line mode, which provides five main functions for the user. They are: inquiry, insertion, updating, deleting, and classification.

81.064

Shelley, B.M.; St. Regis Paper Co.. **FRIS: An Operational Geographic Information System,** (at: Seventh International Symposium on Machine Processing of Remotely Sensed Data with Special Emphasis on Range, Forest, and Wetlands Assessment) (Purdue Res. Found.) 1981 pp.553-554.

Abstract: One of the most significant aspects of the Forest Resource Information System is not that it is a geographic information system with new capabilities, but rather it is in use operationally in a production mode. This system stems from the unique background of government, university, and private industry working together in a jointly sponsored project. Private industry's main interest was not in the production of another experimental geographic information system, but in the production of an operational system which would provide a return on its investment.

81.065

Hagen, D.C.; ARCO Exploration Co.. **The Application of Principal Components Analysis to Seismic Data Sets,** (at: 2nd International Symposium on Computer Aided Seismic Analysis and Discrimination at North Dartmouth MA, USA) (IEEE) 1981 pp.98-109.

Abstract: In the area of stratographic seismology, the oil company explorationist frequently encounters the problem of evaluating subtle character changes that occur within a set of essentially uniform seismic traces. Typically, the zone of interest is limited in the vertical (depth) direction to a small window relative to the overall trace length, and the seismic events are flat, or nearly so, across the set of traces. The application of principal components analysis takes advantage of the high degree of redundancy in the seismic data set to determine its statistical behaviour and reduce it to its essential features. Investigations thus far indicate the information can be reduced to = 10 percent of the original data base size. The principal component correlation coefficients were found to provide an accurate method of grouping the traces in both the supervised and unsupervised modes. If one or more well logs are available, then their geographical locations relative to the seismic data can be used to initialize the cluster centers, to which other traces are added as appropriate.

81.066

Berry, Joseph K.; **Spatial Information Systems. Instant maps for Analyzing Natural Resources Data**, (in: Special Libraries USA, Vol.72, no.3) (School of Forestry and Environmental Studies, Yale Univ.) 1981, July pp.261-269.

Abstract: Spatial information has long been the cornerstone of natural resource planning and management. Traditional methods of map-making and analysis are being replaced by automated geographic information systems. These systems maintain, analyze, and display computer-compatible maps. The ability to easily manipulate mapped data for a wide variety of applications will likely result in an increasing demand for information centers to provide such services.

81.067

Tsurutani, Tateyuki; Kasahara, Yukata; Naniwada, M.; **Data Structure and Language of the Geographic Information System Atlas**, (in: Nec Res. and Dev. JAPAN, no.62) (CANDC System Res. Labs., Nec Res. and Dev.) 1981, July pp.57-64.

Abstract: A geographic information system "administration and total land use analysis support system" (ATLAS) has been developed for spatial analysis and regional planning. The database structure is based on the geographic information structure concepts which contain semantic structure, topological structure and location structure. For a flexible user interface, the system provides a command language IGL (Interactive Geographic Language). The language is also designed based on the geographic information structure concepts.

81.068

Allman, J.S.; **Readjustment of the Australian Primary Geodetic Network Using a Combination of Terrestrial and Satellite Doppler Observations**, (in: Ann. Geophys. FRANCE, Vol.37, no.1) (Univ. of New South Wales) 1981, Jan.-Mar. pp.55-58.

Abstract: The successful inclusion of Doppler satellite measurements into a least square adjustment with terrestrial observations over an area of 7,682,300 KM/SUP 2/ is described. The corrections to each type of observation conform to the statistical model based on the a priori variances and the precision of the adjusted coordinates is well within first order geodetic specification. These results show that spatial measurements made for special projects can be incorporated into national data bases which will thus give maximum cost benefit.

81.069

Hootnick, K.; **Computer Mapping a Smooth Course for Outside Plant Location Records**, (in: Telephony, Vol.201, no.23) (Computer Graphics Co.) pp.26-28.

Abstract: Describes how the southwestern bell telephone company improved its production efficiency by using computer power to convert more than 30000 maps into a mechanized plant location record.

81.070

Horsley, J.; **Housing Builds a Database**, (in: Computing GB, Vol.9, no.50) 1981, Dec..

Abstract: Computing systems have long been used to maintain property files and control housing rents, but the introduction of the local govenment planning and land act has created a "tremendous upsurge" in the need to use computers within housing departments in repairs and maintenance.

81.071

National Energy Software Center. **Mapper,** (National Energy Software Center) 1981.

Abstract: MAPPER provides a command language whereby non-programmers can produce report-quality visual aids. The user can produce slides, graphs, charts, tables, and maps in both color and black and white on 35mm film. Tektronix terminals, and Versatec and Cal-Comp plotters. MAPPER can also be used to make 35mm and 16mm color or black and white movies. MAPPER reads English-language-type command files the user has generated, executing each command as it is read. It acts as a FORTRAN front-end to ISSCO's proprietary DISSPLA graphics software product. An interactive editor allows Tektronix users to create new features on the scope and have these automatically added to the command file. A Tektronix Graphics Tablet can be used to generate MAPPER command files directly . . .Software Description: The program is written in FORTRAN for implementation on either IBM 360/370 (under OS/MVS) of DEC10 (under TOPS 10) computers. Memory requirement for IBM is 470K and for DEC is 178K plus 15 pages of virtual memory. The software requires Version 8.2 of DISSPLA and DISSPOP option along with appropriate film recorder. plotter, and graphics input devices. Graphics devices include CalComp 1036 and 1055 plotters. Versatec and Gould 5005 plotters, FR-80 film recorder, and Tektronix 4010-compatible terminals and Graphics Tablet.

81.072

Strahler, Alan H.; California University, Department of Geography. Remote Sensing Unit. **Use of Collateral Information to Improve Landsat Classification Accuracies,** (National Aeronautics and Space Administration) 1981.

Abstract: Methods to improve LANDSAT classification accuracies were investigated including: (1) the use of prior probabilities in maximum likelihood classification as a methodology to integrate discrete collateral data with continuously measured image density variables; (2) the use of the logit classifier as an alternative to multivariate normal classification that permits mixing both continuous and categorical variables in a single model and fits empirical distributions of observations more closely than the multivariate normal density function; and (3) the use of collateral data in a geographic information system as exercised to model a desired output information layer as a function of input layers of raster format collateral and image data base layers.

81.073

Hoffer, R.M.; Purdue University. **Evaluation of SLAR and Thematic Mapper MSS Data for (Forest Cover Mapping) Using Computer-Aided Analysis Techniques,** (National Aeronautics and Space Administration) 1981.

Abstract: Training and test data sets for CAMIS from NS-001 MSS data for two dates (geometrically adjusted to 30 meter resolution) were used to evaluate wavelength band. Two sets of tapes containing digitized HH and HV polarization data were obtained. Because the SAR data on the 9 track tapes contained no meaningful data, the 7 track tapes were copied onto 9 track tapes at LARS. The LARSYS programs were modified and a program was written to reformat the digitized SAR data into a LARSYS format. The radar imagery is being qualitatively interpreted. Results are to be used to identify possible cover types, to produce a classification map to aid in the numerical evaluation classification of reader data, and to develop an interpretation key for radar imagery. The four spatial resolution data sets were analyzed. A program was developed to reduce the spatial distortions resulting from variable viewing distance, and geometrically adjusted data sets were generated. A flowchart of steps taken to geometrically adjust a data set from the NS-001 scanner is presented.

81.074

Utah University. Center for Remote Sensing and Cartography. **Identifying Environmental Features for Land Management Decisions**, (National Aeronautics and Space Administration) 1981.

Abstract: The benefits of changes in management organization and facilities for the center for Remote Sensing and Cartography in Utah are reported as well as interactions with and outreach to state and local agencies. Completed projects are described which studies (1) Unita Basin wetland/land use, (2) Davis County foothill development; (3) Farmington Bay shoreline fluctuation; (4) irrigation detection; and (5) satellite investigation of snow cover/mule deer relationships. Techniques developed for composite computer mapping, contrast enhancement, U-2 CIR/LANDSAT digital interface; factor analysis, and multivariate statistical analysis are described.

81.075

De Giovanni, Frank F.; Ray, Robert M.; Research Triangle Institute, Research Triangle Park, N.C.. **Revitalization in Washington, D.C.: An Analysis of Change From 1970-1978**, (Department of Housing and Urban Development) 1981.

Abstract: This study examines trends in neighborhood revitalization in Washington, D.C., and demonstrates the usefullness of the District's Municipal Automated Geographic Information System (MAGIS) for identifying areas of impending neighborhood change. Changes in revitalization indicators are examined for each 1970 census tract in the District for the period 1970-1978. Revitalization in D.C. prior to 1970 has occurred in the Capitol Hill area, in areas north of Dupont Circle (i.e., Adams Morgan), and in other inner city areas. Revitalization at that time tended to begin first in neighborhoods where the quality of original housing construction was highest. Inflation in housing prices during the 1970s was felt throughout the city, particularly in poor areas. Revitalization after 1972 was characterized by a greater frequency of speculative sales and was no longer restricted primarily to neighborhoods with quality housing. The District's housing problem after 1975 was caused primarily by a shortage of affordable housing for lower to moderate income households due to tremendous increases in the price of housing in lower income neighborhoods. The MAGIS data base has the advantage of providing a machine-readable time-series of data describing property transactions for an entire city. It combines a wide range of housing market data and is useful for monitoring and analyzing neighborhood change. It also facilitates statistical and graphical analyses of the spatial and temporal dimensions of revitalization. The MAGIS data base limitations may derive from municipal recordkeeping practices and not from the way data sources are integrated in the information system. An analysis of the relationship between census tract characteristics and indicators of neighborhood revitalization is appended. Maps, endnotes, tables, and about 30 references are included.

81.076

Munkasey, Michael; Brown, Perry J.; Noonchester, Michael; **Automated Information Directory Systems (AIDS)**, (Washington Metropolitan Area Transit Authority) 1981.

Abstract: The Automated Information Directory Systems (AIDS) is a singularly unique on-line computer assisted information system designed to determine the optimum bus and/or subway routing between any two points in the greater Washington, D.C. area. AIDS is currently used to answer about 50,000 patron queries per week. Using bus and subway times and routings, street names and address ranges, maps, landmarks, etc., AIDS determines the optimum trip by the time of day for the requested travel . . .Software Description The system is written in the FORTRAN programming language for implementation on a Hewlett-Packard 3000 series II computer using the MPE Release 3 operating system. 256K bytes of core storage are required to operate the system.

81.077

Colwell, J.E.; Sanders, P.A.; Davis, G.; Thomson, F.J.; Environmental Research Inst. of Michigan. **Data Base Manipulation for Assessment of Multiresource Suitability and Land Changes,** (National Aeronautics and Space Administration) 1981.

Abstract: Progress is reported in three tasks which support the overall objectives of renewable resources inventory task of the Agristars program. In the first task, the geometric correction algorithms of the Master Data Processor were investigated to determine the utility of data corrected by this processor for U.S. Forest Service uses. The second task involved investigation of logic to form blobs as a precursor step to automatic change detection involving two dates of LANDSAT data. Some routine procedures for selecting BLOB (spatial averaging) parameters were developed. In the third task, a major effort was made to develop land suitability modeling approaches for timber, grazing, and wildlife habitat in support of resource planning efforts on the San Juan National Forest.

81.078

Mettauer, Jack C.; Regis College Research Center. **Projects in Computer Aided Climatology,** (Air Force Geophysics Laboratory) 1981.

81.079

Tamminen, M.; **Management of Spatially Referenced Data: Conceptual Study of Basic Requirements and Structure,** (Helsinki Univ. of Technology) 1981.

Abstract: The report discusses management of spatially referenced data from an object oriented viewpoint aiming at a conceptual definition of the data contents and access requirements specific to geographical data. A conceptually simple data model is defined and the analysis of data base management is based on it. So-called geographical data independence is proposed as one of the basic objectives. The external interface to spatially referenced data and internal access definition and optimization are discussed and general types of data base management systems briefly compared as solutions to the requirements. Finally, a preliminary proposal for the structure of a specialized system is presented. The concepts are illustrated and tested by some typical geographical data processing tasks and data sets presented in the appendices.

81.080

Clayton, C.; California University, Department of Geography. **Relation of Land Use/Land Cover to Resource Demands,** (National Aeronautics and Space Administration) 1981.

Abstract: Predictive models for forecasting residential energy demand are investigated. The models are examined in the context of implementation through manipulation of geographic information systems containing land use/cover information. Remotely sensed data is examined as a possible component in this process.

81.081

Notz, K.J.; Oak Ridge National Laboratory, TN.. **Integrated Data Base Program,** (at: Annual DOE Participants Information Meeting on Low-level Waste Management at New Orleans LA, USA) (Department of Energy) 1981.

Abstract: The IDB Program provides direct support to the DOE Nuclear Waste Management and Fuel Cycle Programs and their lead sites and support contractors by providing and maintaining a current integrated data base of spent fuel and radioactive waste inventories and projections. All major waste types (HLW, TRU, and LLW) and sources (government, commercial fuel cycle, and I/I) are included. A major data compilation was issued in September, 1981: Spent Fuel and Radioactive Waste Inventories and Projections as of December 31, 1980, DOE/NE-0017. This report includes chapters on Spent Fuel, HLW, TRU Waste, LLW, Remedial Action Waste, Active Uranium Mill Tailings, and

Airborne Waste, plus Appendices with more detailed data in selected areas such as isotopics, radioactivity, thermal power, projections, and land usage. The LLW sections include volumes, radioactivity, thermal power, current inventories, projected inventories and characteristics, source terms, land requirements, and a breakdown in terms of government/commercial and defense/fuel cycle/I and I.

81.082

Yao, S.S.; **Agristars: Renewable Resources Inventory. Land Information Support System Implementation Plan and Schedule,** (National Aeronautics and Space Administration) 1981.

Abstract: The planning and scheduling of the use of remote sensing and computer technology to support the land management planning effort at the national forest level are outlined. The task planning and system system capability development were reviewed. A user evaluation is presented along with technological transfer methodology. A land management planning pilot test of the San Juan National Forest is discussed.

81.083

Ross, Harry D.; **Analysis and Preparation of a Digital Terrain Data Base for Flight Simulator Use,** (Air Force Institute of Technology) 1981.

Abstract: The Air Force needs low-level, high speed flight simulators capable of producing correlated visual, radar, and infra-red display scenes. These scenes can be produced by computer generated imagery if a suitable data base is available. The purpose of this thesis is to develop a digital terrain data base suitable for use in a high speed, low-level flight simulator. A 164,000 square nautical mile data base was constructed from data supplied by the Defense Mapping Agency. This paper discussed the construction and organization of the data base, as well as the data retrieval algorithms. It was demonstrated that the data could be accessed fast enough to simulate Mach 1 flight. (Author)

81.084

Mroczynski, R.P.; Purdue University. **Forest Resource Information System. Phase 3: System Transfer Report,** (National Aeronautics and Space Administration) 1981.

Abstract: Transfer of the forest reserve information system (FRIS) form the Laboratory for Applications of Remote Sensing to St. Regis Paper Company is described. Modifications required for the transfer of the LARYS image processing software are discussed. The reformatting, geometric correction, image registration, and documentation performed for preprocessing transfer are described. Data turnaround was improved and geometrically corrected and ground-registered CCT LANDSAT 3 data provided to the user. The technology transfer activities are summarized. An application test performed in order to assess a Florida land acquisition is described. A benefit/cost analysis of FRIS is presented.

81.085

Swain, P.H.; Purdue University. **Key Issues in the Analysis of Remote Sensing Data: A Report on the Workshop,** (at: Workshop Held in West Lafayette IN) (National Aeronautics and Space Administration) 1981.

Abstract: The procedures of a workshop assessing the state of the art of machine analysis of remotely sensed data are summarized. Areas discussed were: data bases, image registration, image preprocessing operations, map oriented considerations, advanced digital systems, artificial intelligence methods, image classification, and improved classifier training. Recommendations of areas for further research are presented.

81.086

Claesson, T.; Foersvarets Forskningsanstalt. **Implementation of A Display Routine for Coded Map Data Bases,** (National Aeronautics and Space Administration) 1981.

Abstract: The implementation of a display routine for coded map data bases is presented. The display routine is a decoder for the Display RC-code. This code enables efficient coding of binary images, and combines storage efficiency with accessibility.

81.087

McCarthy, J.L.; Merrill, D.W.; Marcus, A.; Benson, William H.; Gay, F.C.; California University. **SEEDIS Project: A Summary Overview,** (Department of Energy) 1981.

Abstract: The SEEDIS project includes a research program to investigate information systems spanning diverse data sources, computer hardware and operating systems; a testbed distributed information system running on a network of Digital Equipment Corperation (DEC) VAX computers, which is used for selected applications as well as research and development; a set of interactive information management and analysis tools in fields such as energy and resource planning, employment and training program management, and environmental epidemiology; and a major collection of databases for various geographic levels and time periods drawn from the US Census Bureau and other sources. (ERA citation 07:055468)

81.088

Ceres, Marie; Heselton, III, Leslie R.; **Computer Program User's Manual for FIREFINDER Digital Topographic Data Verification Library Dubbing System,** (SEMCOR, Inc.) 1981.

Abstract: This manual describes the computer programs for the FIREFINDER Digital Topographic Data Verification-Library-Dubbing System (FFDTDVLDS), and will assist in the maintenance of these programs. The manual contains detailed flow diagrams and associated descriptions for each computer program routine and subroutine. Complete computer program listings are also included. This information should be used when changes are made in the computer programs. The operating system has been designed to minimize operator intervention.

81.089

Gibson, Laurie D.; Lenzmeier, Charles T.; Interactive Systems Corp.. **A Hierarchical Pattern Extraction System for Hexagonally Sampled Images,** (Air Force Office of Scientific Research) 1981.

Abstract: The objective of this research was to study the application of Generalized Balanced Ternary (GBT), a hierarchical coordinate system, and its related data structures to the problem of extracting line and area data (vectors) from rasterized images. GBT allows the pixels in an image to be aggregated over regions of different sizes. In the raster to vector process certain descriptors are calculated for these aggregates. They describe the general raster pattern within the aggregate region. Algorithms were developed to vectorize by examining the descriptors rather than the pixel data. The algorithms were implemented in software and tested on sample data. The results indicate this approach is promising and suggest ways to improve the algorithms.

81.090

Brown, Robert F.; Moellering, Harold; **ICFITG: A Program for Interactive Contouring from an Irregular Triangular Grid,** (Defense Mapping Agency Aerospace Center) 1981.

Abstract: The computer program Interactive Contouring from an Irregular Triangular Grid (ICFITG) allows the program user to make judgements during the preparation or modification of an isarithmic map. This is accomplished interactively through the use of virtual images and devices, character commands and responses, and audio signals such that the cartographer can make decisions that affect the outcome of the final map while the program is executing. It is interactive computer graphics that form the link between the speed and repetitive processing power of the computer and the decision making power of the cartographer. The computer program ICFITG incorporates a contouring algorithm which is based on the formation of an irregular triangular grid. The use of such an algorithm ensures that the original control points lie on the surface and allows provisions to be included that give respect to surface characteristics such as breaklines. Based on research conducted at the Ohio State University, the combination of an irregular triangular grid contouring algorithm and interactive computer graphics results in a fast, flexible and easy to use computer contouring program.

81.091

Mirkay, Francis M.; **Defense Mapping Agency Digital Data Base Evolution,** (Defense Mapping Agency) 1981.

Abstract: The Defense Mapping Agency (DMA) has massive amounts of MC&G digital data holdings resulting from programs to support DoD advanced weapons systems and automated map and chart production. The digital data is used to support the DoD and NATO countries as well as internal DMA production. DMA requires a digital data base to maintain, store, retrieve, compare, and report on this MC&G digital data. This paper addresses current DMA efforts that will evolve into an on-line interactive, distributed, networked data base system and its associated environment for data handled by HQ DMA and the DMA Production Centers.

81.092

Schalla, R.; Leonhart, L.S.; **Dealing with Regional Hydrologic Data-Base Limitations. Case Example: The Columbia River Basalts,** (at: Symposium on Uncertainties Associated With the Regulation of the Scolojec Disposal of High Level Radioactive Waste in Gattinburg, TN.) (Rockwell Int'l Corp.) 1981.

Abstract: Limitations are encountered in assembling hydrologic data for a broad geographic region, such as the Columbia Plateau in the northwestern US, into a conceptual model of the hydrologic system. These limitations may become resonant in subsequent numerical simulations of hydrologic system behaviour. Included among such data limitations are irregular spatial distributions of data, decreases in information with increasing depth from the land surface, uncertainties about the reliability of reported hydrologic data, disparities in time dependent parameters, and lack of field verification of data. The preparation of a regional hydrologic system description, therefore, first involves a comprehensive data evaluation, wherein the data are classified and ranked in terms of their utility to the study. The results of this evaluation are essential in planning future data acquisition activities as well as in selecting and developing models. In turn, iterative use of modeling, data refinement, and data acquisition is considered to be highly effective. The case example of preparing a hydrologic system description for the Columbia Plateau, as required for repository siting, illustrates methods of determining the accuracy of certain data, compensating for data limitations, evaluating the need for acquiring additional data, and refining data through iterative techniques. Emphasis is placed on professional subjectivity, which has proven to be essential in data base evaluation and refinemnt. (ERA citation 06:031710)

81.093

Van Est, Jan; Smit, Louis; **Geocoding: The Spatial Dimension of an Information System for the MVRO,** (Planologisch Studiecentrum TNO) 1981.

Abstract: One of the major problems of research and planning and policy making is the lacking of the availability of information. Modern analysis is often hampered by this, due to the fuzzy locational identification of the data. Many variables and attributes are only measured (i.e. available) on geographical areas of different sizes, which are overlapping as well. If the data are available and if they can be linked to each other then it is still a very time consuming process to derive the required information. The above reveals some evidence that gives rise to a new line of thinking, in which the existence of a spatial dimension is accounted for: geocoding. The spatial structure, described by points (addresses) and segments (streets) and polygons (zonal areas), can be combined with locational data files within the framework of a spatial oriented information system. Started in 1967 in New Haven, USA, many countries are benefitting from this new concept. For that reason the Ministry of Housing and Physical Planning drew up an inventory of possible geocoding methods which are presented in this paper

81.094

Tazelaar, James; **Synthesis Guide for Lines of Communication**, (Army Engineer Topographic Labs.) 1981.

Abstract: This report provides methods and procedures employed by US Army Terrain Analysts to synthesize an LOC overlay from previously formatted military geographic information (MGI) thematic graphic data base (TGDB). Specific terrain factor overlays, such as Roads and Related Structures, Railroads, Airfields, etc. are taken one at a time and LOC-relevant data are traced onto a single frosted mylar overlay that, redrafted, becomes the final LOC document. By combining specific terrain factor overlay data from MGI, TGDB, the analyst produces a topographic product suitable for expedient reproduction by Army topographic field elements.

81.095

Murphy, Dennis L.; **Database Management: A Forestry Inventory Application**, (North Central Forest Experiment Station) 1981.

Abstract: Forestry survey inventories provide data for a variety of users, including private and public forest managers, forest scientists, and the general public. Because user needs have changed in recent years, one standard set of tables no longer provides adequate information. In attempting to find a faster and more flexible method for responding to special requests for inventory data, a study of database designs was initiated using forest inventory data from Minnesota's Aspen-Birch Forest Survey Unit. Two databases were created, representing two levels of information detail. The databases were compared with each other and with standard forest inventory retrieval methods to evaluate their cost effectiveness and ability to satisfy user demands.

81.096

National Technical Information Service. **Interactive Computer Graphics. March 1980 - July 1981 (Citations from the Engineering Index Data Base)**, (National Technical Information Service) 1981.

Abstract: The bibliography cites abstracts from worldwide literature on computer hardware and computer software implementation of interactive graphics systems. Included are applications in a variety of fields. (This updated bibliography contains 252 citations, all of which are new entries to the previous ed.)

81.097

National Technical Information Service. **Interactive Computer Graphics. 1978 - Feb, 1980, Citations from the Engineering Index Data Base**, (National Technical Information Service) 1981,.

Abstract: The bibliography cites abstracts from worldwide literature on computer hardware and computer software implementation of interactive graphics systems. Included are applications in a variety of fields. (This updated bibliography contains 267 citations, none of which are new entries to the previous ed.)

81.098

GKY & Associates, Inc.. **Flood Plain Mapping Using Computer Graphics**, (Office of Water Research & Technology) 1981.

Abstract: Based on a Feasibility Research Study completed at Cornell University, this study examined whether computer graphics could be used in specifying flood limits for Federal flood insurance and local flood easement delineation. This was an extension of the Cornell research on water resources planning using computer graphics to generate analysis of a variety of water resource problems. Complex mathematical models were adapted to computer graphics output - HEC-II Water Surface Profiles, a state-of-the-art computer program developed by the Corps of Engineers, was adapted for use in this program. The computer configuration consisted of a PDP 11/45 mini-computer, a Sumagraphics digitizing tablet, and a Tektronix 4014-1 display terminal with a 4631 hard copier. The study was divided into nine tasks, including interfacing with the user community, adapting HEC-II to an interactive/graphical output environment, selecting the hardware system most responsive to user capabilities, coding, debugging, and testing the software, writing user manuals, and conducting demonstrations. The goal of demonstrating that computer graphics could be used in hydraulic analysis of flood plains was met.

81.099

Faintich, Marshall B.; Figura, Paul C.; Quinn, E.W.; **The Sensor Image Simulator**, (Defense Mapping Agency Aerospace Center) 1981.

Abstract: The primary objective of the digital sensor simulation investigations being conducted at the Defense Mapping Agency (DMA) is to establish an editing and analysis capability for the digital culture and terrain data bases. For purposes of quality control and data base applicability investigations, DMA has developed the Sensor Image Simulator (SIS), a very high speed data base edit station and static scene simulator that allows for interactive query and manipulation of individual features in the data base displays and/or simulated sensor scenes to determine the corresponding data base elements responsible for the simulated features. The SIS was installed at DMA in 1981, and is designed to play a key role in determining the applicability of prototype data bases for use in advanced training simulators, as well as to ensure the quality of, and coherence between, the various digital data bases prior to new data insertion into the master cartographic data base files.

81.100

National Technical Information Service. **Interactive Computer Graphics. 1976 - June, 1981 (Citations from the NTIS Data Base)**, (National Technical Information Service) 1981.

Abstract: Federally-funded studies are cited on hardware and software implementation for interactive graphics systems. The bibliography includes applications in a variety of fields. (This updated bibliography contains 298 citations, 97 of which are new entries to the previous edition.)

81.101

Deschene, Wallace A.; **User's Manual: Geographic Information System**, (Intermountain Forest and Range Experiment Station) 1981.

Abstract: The user's guide provides information about the RIDPOLY (WRIS) geographic information system. It explains how to prepare maps, digitize and scan input, and code control cards to operate the RIDPOLY programs. Component programs in the system overlay map layers (MOSAIC), combine map layers (MERGE), edit map-files (TONIC), plot map-files (CHART), produce data in the Universal Data Exchange Format (XCHG), and convert data to grid format (PGRID).

81.102

Likens, W.C.; Peterson, D.; **Statewide Landsat Inventory of California Forests,** (National Aeronautics & Space Administration) 1981.

Abstract: Six forest cover categories were mapped, along with 10 general land cover classes. To map the state's 100 million acres, 1.6 acre mapping units were utilized. Map products were created. Standing forest acreage for the state was computed to be 26.8 million acres.

81.103

Faintich, Marshall B.; **Digital Image Technology: Cartographic Systems at the Defense Mapping Agency Aerospace Center,** (Defense Mapping Agency Aerospace Center) 1981.

Abstract: The Defense Mapping Agency Aerospace Center has developed a program to exploit digital image technology for the advancement of mapping, charting, and geodesy. Primary investigations include image processing, analysis, and display techniques, and computer image generation. A dramatic impact has been made in the ability to produce, analyze, and validate digital data bases produced by the Defense Mapping Agency by applying state-of-the-art digital image technology concepts to the development of new interactive prototype and production cartographic systems.

81.104

Johnson, P.E.; Oak Ridge National Laboratory, TN.. **Computer Graphics at Oak Ridge National Laboratory: Some Observations Based on Experience,** (at: Princeton Conference on Computer Graphics Applications in Princeton, NJ) (Department of Energy) 1981.

Abstract: This paper focuses upon explaining six conclusions concerning what the author considers to be an appropriate philosophy toward developing computer graphics software, particularly computer mapping. In summary, the conclusions are that computer mapping software should not be developed apart from the researcher or analyst and that those efforts developed apart tend to be esoteric in nature. Three examples involving regional energy modeling and related impact assessment are used to illustrate how development of computer graphics should be integrated into research involving geographical analysis.

81.105

Boyd, W.E.; Harlan, J.C.; Texas A&M University, College Station Remote Sensing Center. **Landsat Range Resource Information System,** (National Aeronautics and Space Administration) 1981.

Abstract: A series of test products were developed from LANDSAT data sets for North Central Texas that paralleled the needs of ranchers, technical personnel, and the media. The products and evaluation questionnaires were mailed to approximately 150 ranchers who had reported an interest in evaluating the information systems. In addition to the rancher group, fourteen media people and a thirty-three member group in the agri business/technical community was also chosen to receive test products. The group responses are analyzed. Examples of the test products and associated questionnaires are included.

81.106

Li, Victor On-Kwok; **Performance Models of Distributed Database Systems,** (Massachusetts Inst. of Technology, Cambridge Lab) 1981.

Abstract: A distributed database (DDB) consists of redundant copies of data files geographically distributed on a computer network. This thesis develops a performance model of a DDB. This model can be used to compare the performance (i.e., response time, utilization, etc.) of different concurrency control algorithms. We started by developing a network of queues model of a communication subnetwork. We have originally attempted to employ Jackson's Model but have concluded that Jackson's Model is inadequate for our purposes. The Independent Queues Model that we developed in this thesis make somewhat stronger assumptions than Jackson's Model, but has more flexibility and approximates better a real communication subnetwork. We found that in a general DDB, concurrency control algorithms could not be modelled accurately without taking into consideration the particular query processing strategy used. We have therefore developed two new query processing strategies: the MST and the MDT Algorithms. These two algorithms are easy to analyze and to implement. We next modelled the competition among different transactions in the DDB for the services of the database management system. Probabilistic arguments were used to determine the probability of conflicts between different database transactions and the delay due to conflicts.

81.107

Emerson, C.J.; Nungesser, M.K.; Oak Ridge National Laboratory, TN.. **Comparison of Graphics Packages Used with the Geoecology Data Base,** (Department of Energy) 1981.

Abstract: The Geoecology Data Base represents a unique compilation of computerized county-level environmental data for research and development. The data base contains selected data from extant sources on terrain and soils, forestry, vegetation, agriculture, land use, wildlife, air quality, climate, water resources, natural areas, and endangered species. The Statistical Analysis System (SAS) is used for data storage, retrieval, analysis and display. Visual output such as maps, graphs, and charts are very effective in conveying information. The benefits of computer-generated graphics for scientific analysis are enhanced by convenience, flexibility, ease of interfacing with analysis and data management systems, high quality resolution, multi-color capabilities, and rapid turnaround. Historically, several mapping programs were needed to display results of studies using the Geoecology Data Base. SAS's GMAP procedure combines many features of these mapping packages with its own capabilities. Data from the Geoecology Data Base will be utilized to evaluate the usefulness of GMAP in lieu of other mapping packages.

81.108

National Technical Information Service. **Computer Aided Mapping, 1976 - January, 1981 (Citations from the NTIS Data Base),** (National Technical Information Service) 1981.

Abstract: Federally-sponsored research on the applications of computer techniques to cartography is cited. Automatic mapping, geographic data bases, and computerized photomapping are included. (This updated bibliography contains 232 citations, 58 of which are new entries to the previous edition.)

81.109

National Technical Information Service. **Computer Aided Mapping, 1970 - January, 1981 (Citations from the Engineering Index Data Base),** (National Technical Information Service) 1981.

Abstract: Research on the applications of computer techniques to cartography is cited from the worldwide journal literature. Automatic mapping, geographic data bases, and computerized photomapping are included. (This updated bibliography contains 198 citations, 51 of which are new entries to the previous edition.)

81.110

Evaluating the Land, (in: Land, Vol.2, no.4) 1981.
Location: 42.

81.111

Smith, Barry; **Prime Land, Land Evaluation and Land Use Policy,** (in: Journal of Soil and Water Conservation,) 1981, July-August.
Location: 42.

81.112

Land Information Management at UNB, (in: Land, Vol.2, no.1) (Lands Directorate, Environment Canada) 1981.
Location: 42.

81.113

LRIS Goes International, (in: Land, Vol.2, no.1) 1981.
Location: 42.

81.114

Toews, N.A.; **Mines and Mineral Resources - Electronic Data Processing,** microlog no.81-2572, (Energy, Mines & Resources) 1981.

81.115

Casvand, T.; Fabbri, Andrea G.; Nel, L. D.; **Digitization and Processing of Large Regional Geological Maps,** microlog no. 82-3389, (NRCC Division of Electrical Engineering) 1981.

81.116

Interministerial Committee on Geographical Referencing. **Proceedings of Seminar on Geographic Referencing,** microlog no. 82-3481, (at: Seminar on Geographic Referencing) (Ministry of Natural Resources) 1981.

81.117

Woods Gordon Management Consultants. **Regional Planning System Study: Demands upon the System,** microlog 82-4872/1, (Alberta Municipal Affairs) 1981.

81.118

Calgary Regional Planning Commission, Regional Planning Services. **Regional Information System: Statistical Report 1979 and 1980,** microlog 83-0946/1, (Calgary Regional Planning Commission) 1981.

81.119

McKibbon, George; **Ecosystem Stability and Biophysical Land Classification Techniques.,** microlog no. 83-2311/1, (Ryerson Polytechnical Institute, Department of Urban and Regional Planning) 1981.

81.120

Riley, Sharon I. (Ed.); **GeoRef Thesaurus and Guide to Indexing,** (American Geological Institute) 1981.
Location: 05.

81.121

Slaney, V.R.; **LANDSAT Images of Canada: A Geological Appraisal,** (Geological Survey of Canada) 1981.
Location: 05.

81.122

Canada. Department of Energy, Mines and Resources. **State and Utility of Computer-assisted Map and Chart Production**, (at: Conference on State and Utility of Computer-assisted Map and Chart Production, Ottawa) (National Advisory Committee on Control Surveys and Mapping) 1981.
Location: 05.

81.123

Schneider, Stanley R.; McGinnis, David F.; Gatlin, James A.; **Use of NOAA/AVHRR Visible and Near-Infrared Data For Land Remote Sensing**, (United States National Oceanic and Atmospheric Administration) 1981.
Location: 05.

81.124

Van Ravenswaay; Classen, Daniel B.; **Integrated Resource Management Information: A Role for LandSAT**, (University of Calgary) 1981.
Location: 10.

81.125

Scace, Robert C.; **Land Use Classification Systems: An Overview**, (Canada Department of the Environment, Lands Directorate) 1981.
Location: 10.

81.126

Paine, David P.; **Aerial Photography and Image Interpretation for Resource Management**, (John Wiley & Sons) 1981.
Location: 10.

81.127

Best, William G. (Ed.); Weselake, Sue Anne (Ed.); **Proceedings of Canadian Symposium on Remote Sensing**, (at: Seventh Canadian Symposium on Remote Sensing at Winnipeg, Manitoba) (Canadian Institute of Surveying) 1981.
Location: 10.

81.128

Tom, Henry; **GEOGRAPHIC CODES: FEDERAL INFORMATION PROCESSING STANDARDS, Technical Papers of The American Congress on Surveying and Mapping**, (at: ASP-ACSM Fall Technical Meeting at San Francisco, CA and Honolulu, HI) (The American Congress on Surveying and Mapping) 1981 pp.10-16.

Abstract: The National Bureau of Standards has issued several Federal Information Processing Standards (FIPS) for geographic identification and the representation of spatial data by the Federal Government. These standards, in the form of unique alpha or numeric codes, are commonly known as FIPS codes. With the proliferation of computers in mapping, geoprocessing and spatial analysis, there is an increasing need to understand and use FIPS codes. Therefore, an overview of the Data Element and Representation Standards Program, directly responsible for these geographic codes, is presented, including its activities and relationship to other Federal agencies and to organizations concerned with standardizing geographic codes. Existing and proposed Federal Information Processing Standards for geographic applications are reviewed with emphasis on geography, coding logic and significant features. The intent is to provide a clearer understanding of FIPS codes in order to maximize their use and promote an awareness for the potential of standard geographic codes.

Location: 01.

81.129

Satharanond, V.; **An Application of the Hypergraph-based Data Structure (HBDS) in an Agricultural Suitability Study, Technical Papers of The American Congress on Surveying and Mapping**, (at: ASP-ACSM Fall Technical Meeting at San Francisco, CA and Honolulu, HI) (The American Congress on Surveying and Mapping) 1981 pp.29-38.

Abstract: The Hypergraph-Based Data Structure (HBDS), proposed by Dr.

Francois BOUILLE (BOUILLE 1977) has been widely accepted as a universal model for data structuring. Sophisticated phenomenon such as is found in cartography may be entirely structured with less difficulty than when structured by the various other existing data structure models. Therefore, it is expected that, in the very near future, one could have a so-called "Multi-purpose Cartographic Data Bank" which can be used for many applications. The paper will present one of a number of possible applications which can make direct use of this data bank. It deals with automatic search of areas which is suitable for the rice-agriculture. The main goal is to demonstrate how one could apply the data structure to a specific application without having to think about the storage structure concept. Various algorithms are shown in EXEL mathematical language because it allows one to describe the algorithm succinctly and concisely, and in particular, it gives independency from any programming language.

Location: 01.

81.130

Wilson, Paul M.; **Integration of Local and Regional Data Bases, Technical Papers of The American Congress on Surveying and Mapping,** (at: ASP-ACSM Fall Technical Meeting at San Francisco, CA and Honolulu, HI) (The American Congress on Surveying and Mapping) 1981 pp.43-50.

Abstract: Many computer-based systems for geographical data handling have been used by both local governments and regional planning agencies, but there has been surprisingly little cooperation between agencies which share a common geographic focus. Such cooperation, or vertical data integration, is prevented by a number of technical and institutional factors. These factors are outlined, and three projects in the San Francisco Bay region are described as illustrations of how these barriers might be overcome.

Location: 01.

81.131

Jones, Harold E.; Pearson, Michael; **Land Information Management - A New Course for Old Surveyors, Technical Papers of The American Congress on Surveying and Mapping,** (at: ASP-ACSM Fall Technical Meeting at San Francisco, CA and Honolulu, HI) (The American Congress on Surveying and Mapping) 1981 pp.116-122.

Abstract: Because of the changing course of the survey profession the University of New Brunswick has set up an 8-month post-graduate course of study for practising surveyors. The authors, two guinea-pig trial-run students, completed the course in April 1981. The program provided a look at the needs of land-registrars, assessors, developers, mappers, geologists, foresters, weathermen, planners, etc.; a look at the frontiers of development in digital mapping and data-base management; and a general overview of the emerging Information Society.

Location: 01.

81.132

Moreau, Richard; **Integrated Densification by Doppler, Technical Papers of The American Congress on Surveying and Mapping,** (at: ASP-ACSM Fall Technical Meeting at San Francisco, CA and Honolulu, HI) (The American Congress on Surveying and Mapping) 1981 pp.272-281.

Abstract: A rigorous test is described, whereby the validity of relative doppler measurements for establishing second-order points and correctly integrating them into the official geodetic framework is investigated. The test comprises: measurement of 50 simultaneous passes at eight points by JMR1 receivers; computation of the "doppler polyhedron" by GEODFP and SAGA III; integration of the polyhedron into the framework. Analysis of the results leads to the adoption of revised observational procedures in order to meet second-order accuracy and integration standards for northern Quebec and to optimally exploit the vertical coordinate.

Location: 01.

81.133

Smith, Doyle G.; **Raster Data Development in the National Mapping Division U.S. Geological Survey, Technical Papers of The American Congress on Surveying and Mapping,** (at: ASP-ACSM Fall Technical Meeting at San Francisco, CA and Honolulu, HI) (The American Congress on Surveying and Mapping) 1981 pp.284-288.

Abstract: The National Mapping Division conducts applications research and software and technique development efforts with respect to use of raster-formatted data for digital cartographic applications. These R&D efforts center on the capabilities of the Sci-Tex RESPONSE 250 instrumentation. The activity has resulted in new digital applications as well as the generation of new special-purpose map graphic products. The Sci-Tex RESPONSE equipment is used for electronic interactive editing and revision as a means of providing quick update capability for generating selected standard map graphic products.

Location: 01.

81.134

Bouille, Francois; **The Impact of ADA on Cartography and Topological Terrain Modeling, Technical Papers of the American Congress on Surveying and Mapping,** (at: ASP-ACSM Fall Technical Meeting at San Francisco, CA and Honolulu, HI) (The American Congress on Surveying and Mapping) 1981 pp.289-298.

Abstract: The "green language" developed in an international cooperation and chosen by the D.O.D. has some features which are particularly interesting for the cartography and the topological terrain modeling. During a long time, the modeling has been considered as a "digital terrain modeling", merely dealing with the metrical properties of the spatial data, more than their topological properties. More recently, the concept of Topological Terrain Model has been introduced (10th I.c.a. Conf. Tokyo, 1980), and a working group has been created for this topic. In fact, the topological data handling in cartography requires some features which were introduced in languages like SIMULA 67, C and PASCAL, and which are present and more easily manipulated in 'ADA'. The purpose of this paper is to present these essential aspects with the main consequences on the cartographic computerized processing, in connection to other applications. It also would like to emphasize the importance of developing ADA programs, due to the development and extension of this very high level programming language in the near future. Due to this impact, it henceforth is taught at the University, specifically to students concerned by the automated cartography and digital mapping.

Location: 01.

81.135

Henry, Bradford B.; **Automated Mapping in Minneapolis and Hennepin County Minnesota, Technical Papers of The American Congress on Surveying and Mapping,** (at: ASP-ACSM Convention at Washington, DC) (The American Congress on Surveying and Mapping) 1981 pp.194-200.

Abstract: The paper describes the engineering design and interactive graphics system called MAPS jointly developed and used by the City of Minneapolis and Hennepin County, Minnesota. The system was initially used solely for the production of automated plan and profile engineering plan sheets. Data for the plan sheets is digitized from aerial photos, processed by the computer and updated by hand coded data or interactive graphics. Automation of the engineering plans has halved manpower requirements between 1974 and the present. MAPS is now taking advantage of the ability of computers to store and selectively reproduce large amounts of data. A county-wide property basemap tied into state plan coordinates is being built. A trial project is now underway with the local gas, telephone and electric utilities analyzing the benefits of storing their facilities within their property map framework. MAPS is also capable of producing an unlimited variety of planning maps.

Location: 01.

81.136

Wilson, Paul M.; **Comparing Sources of Terrain Data for a Geographical Information System, Technical Papers of The American Congress on Surveying and Mapping,** (at: ASP-ACSM Convention at Washington, DC) (The American Congress on Surveying and Mapping) 1981 pp.201-210.

Abstract: Representation of terrain is an important feature of any system for handling geographic data. Many land use and natural resource applications are dependent on the existence of elevation data or its derivatives. Terrain data, however, is often particularly difficult and expensive to collect and store. Two sources of machine-readable elevation data have recently become available. These two sources, the DTT and DEM, are compared for their applicability to an example GIS, the Bay Area Spatial Information System. Both mathematical and graphical comparisons are used.

Location: 01.

81.137

Liles, William C.; Nugent, Edward D.; **Data Management Considerations for Large Cartographic Information Systems, Technical Papers of The American Congress on Surveying and Mapping,** (at: ASP-ACSM Convention at Washington, DC) (The American Congress on Surveying and Mapping) 1981 pp.211-222.

Abstract: Large cartographic data bases are becoming increasingly important to the mapping, charting, and geodesy (MC&G) community. Usage of these data bases presents requirements for storage and manipulation. Digital data processing technology offers flexibility and responsiveness to these needs; however, conventional data base management systems suffer inadequacies in attempting to meet large cartographic information system requirements. This paper explores the principal data base considerations that need to be studied to advance toward more amenable systems: user characteristics and requirements, from which acceptable user interfaces can be developed; incorporation of spatial data management abilities and mathematical functions for data manipulation; studies to develop models, structures, and storage schemes for the data; and system requirements in a multiple-user environment. The paper presents topics for consideration to bring together the growing technologies of MC&G and data base management.

Location: 01.

81.138

Gustafson, Glen C.; Loon, Joseph C.; **Updating the National Map Accuracy Standards, Technical Papers of The American Congress on Surveying and Mapping,** (at: ASP-ACSM Convention at Washington, DC) (The American Congress on Surveying and Mapping) 1981 pp.466-482.

Abstract: The reliability of contour lines on 1:24,000 U.S. Geological Survey topographic quadrangles has been determined, based on the method of Carl Koppe, widely applied in Europe. Data for the experiment have been supplied by the USGS. This consists of all suitable vertical accuracy checks during a five-year production period. The analysis is unique in that it takes account of terrain slope, and generalizes typical accuracy over a five-year production period. Recommendations are made regarding the accuracy standards for the new metric map series.

Location: 01.

81.139

Leberl, Franz W.; Olson, Dale E.; Oesterhelt, Gunter; **Performance of Raster Scanning and Processing of Cartographic Data with the MBB-KONGSBERG SYSSCAN System, Technical Papers of The American Congress on Surveying and Mapping,** (at: ASP-ACSM Convention at Washington, DC) (The American Congress on Surveying and Mapping) 1981 pp.546-547.

Abstract: Raster scanning of cartographic data has recently had a commercial breakthrough. Systems with a scanner and other hardware as well as extensive software have become available on the market to take on a variety of specialized tasks converting analogue cartographic data to a digital format. Typical tasks include the generation of digital terrain models from contour line overlays and the digitization of thematic data as an input into geo-information systems. The SysScan system consists of a KartoScan, that is a raster scanner operating with white light and a linear detector array, a set of graphics work stations using refresh storage tubes, manual digitizing tables and extensive software to convert raster scanned data to a vector format, to tag the data, edit it and perform various transformations of the data into different data structures, as well as evaluations as requested by a user of digital geo-information. The paper demonstrates results achieved with SysScan. In particular, an application of the system to the generation of raster digital elevation models will be discussed, using contour lines and drain-ridge data as an input and minimum amount of interactive manual work. Furthermore, the processing of so-called polygon data and of engineering drawings will be illustrated. An important feature is the incorporation of manually digitized data, to be discussed as well.

Location: 01.

81.140

Nelson, Jon; Smith, Michael; **A Microcomputer Supported Regional Profile Information System for the '80's, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses**, (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.41-48.

Abstract: The urban/regional information system presented in this paper illustrates the use of inexpensive microcomputer systems. By coupling microcomputer technology with modular programming techniques an interactive information system was developed to increase the efficiency and effectiveness data provides in a planning context. City planners, urban analysts, regional economists and many other employees of cities, counties and regional agencies are often called on to answer information requests by the public. The authors provide a new approach to providing this service.

Location: 01.

81.141

Jay, Joseph G.; Rowan, Michael J.; **Geoprocessing Applications in Two Local School Systems, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses**, (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.88-96.

Abstract: Minicomputer-based geoprocessing applications have been developed for two school systems in the metro Atlanta region. The Cobb County Public Schools implemented a Dime-based spatial data retrieval program. This program, which is used to assist in delineating attendance zone boundaries, was developed on a Data General Nova minicomputer. The Clarke County School District implemented a gridded data base, manual geocoding scheme and then developed programs for the aggregation of statistics by polygon. The progams were written on an IBM System 34 and interfaced with IBM report generating utilities. This paper describes and compares the development process, the design considerations, and the effectiveness of each system.

Location: 01.

81.142

Gliksman, Sholom I.; **Assessor's files as an Information Source for Planning: Perspectives from the National Infill Study, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses**, (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.109-117.

Abstract: Increasingly, local government officials must resolve policy issues with data from information systems that were created to deal with concerns very different from such issues. This paper addresses questions relating to the applicability of assessors' files to identify constraints on, and opportunities for, development of vacant parcels in urbanized areas.

We discuss the amount of information available, the extent of geocoding, and validity of the data. We look also at the ways that the disparate concerns for

which the files were created lead to special constraints on the use of such files, even as they offer innovative opportunities.
Location: 01.

81.143
Kellerman, Aharon; **Geostatistics: Useful Means for an Efficient Presentation of Urban and Regional Data, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.169-179.
Abstract: Geostatistics aims at efficient and synthetic presentation of spatial data. Geostatistics achieves this goal by converting univariate measures for spatial two-dimensional problems. The mean center (mean), the standard distance (standard deviation), and the optimal division of territories (analysis of variance) have many uses when large volumes of urban and regional data have to be presented in a summarizing manner.
Location: 01.

81.144
Madziya, R.G.; **The Neighbourhood - One Approach to Analysing It, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.180-192.
Abstract: The handling of information (gathering, analysis, synthesis, storage and retrieval), within any defined geo-statistical unit, is based on the premise that well organized information improves the decision-making and problem-solving skills of any organizational executive, in that the information will be timely, accurate, and complete. Planning and development, be it economic, social or physical, at the neighbourhood level, requires that adequate data and information be provided so that decisions are made from a good basis. Knowing the neighbourhood in these terms not only helps the decision maker, but also the neighbourhood resident and others, in understanding the adequacies and inadequacies of the neighbourhood in order for them to appreciate, and thus contribute, to the planning and development process. Data on land use (e.g., residential, commercial, and industrial types, etc.) are required so that any decision to retain or change any of the land use types will be based on adequate, accurate, and current information. In addition, data on the demographic characteristics of the neighbourhood and their relationship to the intensity of development by each land use type, is required if the results of the planning and development process are to be meaningful.

This paper deals with the process of dissecting and analysing a neighbourhood by any data element, or a combination thereof, which the user chooses at any given point in time.
Location: 01.

81.145
Robinson, Vincent B.; Coiner, Jerry C.; **Microcomputer Geoprocessing as a Minimum Technology Solution for Data Management in Developing Countries, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.214-226.
Abstract: One of the major impediments to the efficient use of data in developing regions has been their lack of capital to provide a rational context for processing large amounts of spatial data generated by development activities. When compared with the short-term benefits, investment in mainframe and/or minicomputer systems is often prohibitively expensive for capital poor regions. Microcomputer technology promises to eliminate this barrier. This paper presents the rationale and design strategy for a prototypical microcomputer geoprocessing system developed by the United Nations Centre for Human Settlements (HABITAT) for transfer to developing countries.
Location: 01.

81.146

Baltz, David K.; **Geoprocessing Technical Transfer in Local Government, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.227-235.

Abstract: In the field of geoprocessing, technological developments have created many systems with flexible, beneficial capabilities. These systems often can become available for local applications at far less than their full costs.

This paper proposes that six steps are involved in the implementation and utilization of such systems. These steps are deduced from two local geoprocessing examples. Microeconomic analysis is used to graphically depict some of these steps and to show how a system's costs relate both to its benefits and to the actual implementation decision.

Location: 01.

81.147

Johnson, Randall K.; **Implementing a Centralized Municipal Geoprocessing Capability, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.236-243.

Abstract: In the past, a coordinated internal geoprocessing capability was a missing link between the users and providers of data within the City of Seattle. Since the early 70s, various departments in the City of Seattle have made use of geoprocessing capabilities to improve access to data. However, these applications were implemented through an outside service bureau and were not coordinated with one another. This paper describes the City's past applications of geoprocessing, the effort to internalize those capabilities, and recent departmental applications which have been implemented using the centralized technology. Future plans are discussed, and an evaluation is made of the effort required, and rationale for centralizing geoprocessing within municipal government.

Location: 01.

81.148

Hanson, Mark G.; **Design Requirements for a Program to Process Locational, Street-Address-Based Descriptions, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.244-252.

Abstract: Three years ago, the author described (at the Wasington D.C., URISA meeting) the geo-coding system ODMATCH, developed at the Central Transportation Planning Staff. With this experience as a guide, a new, enhanced system, CUPID, has been developed. A prime feature of the new system is the street address parsing component, which is the focus of this paper.

Location: 01.

81.149

Dyer, Robert S., Jr.; **Digitization of Transportation Networks Using GBF/DIME File Coordinates, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.253-263.

Abstract: With the increased availability of computer graphics and related software, agencies are now more aware of the rewards and benefits of improved analysis offered by graphic display. However, even though many graphics software packages are available performing all types of analysis and displays, very few address the unglamorous but necessary portion of building the coordinate data file.

This paper will describe an inexpensive technique for agencies to create a node-coordinate file for their transportation and transit planning models without incurring the costs of renting or buying a large digitizer.

Location: 01.

81.150

Moyer, D. David, ed.; Portner, James; Mezera, David F.; **Overview of a Survey-Based System for Improving Data Compatibility in Land Record Systems, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.264-279.

Abstract: The Westport Land Records Project is an interdisciplinary effort by a group of University of Wisconsin (Madison) researchers in collaboration with the Dane County Regional Planning Commission, the Wisconsin State Cartographers Office, and the Economics and Statistics Service of the USDA. The project is concerned with the development of an automated land data base for the township of Westport in Dane County. General project objectives include examination of the usefulness, reliability, cost and required accuracy of a survey-based cadastre, the feasibility of developing such a system within a local government setting, and the determination of public attitudes towards land information held by the populace within the study area.

The immediate project tasks (which are the primary focus of this paper) are (1) to develop compatibility among spatial resource records by integrating survey control with existing source data and (2) improve physical data handling techniques. The latter task involves the development of a hardware configuration and the associated software needed to manipulate these spatially referenced data.

Location: 01.

81.151

Dyer, Allan G.; **A Land Evaluation Model (LEM): Concept, Design, and Application, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.280-293.

Abstract: Land use decisions become more important as growing populations exert increasing demands on available land for agriculture, recreation, urbanization and forestry. These decisions should be based on a comprehensive evaluation of all possible land uses.

The LEM will make such an evaluation possible. It considers not only land capability but other relevant issues, such as society's long-range objectives regarding land, energy supplies, domestic food requirements, urban expansion, international commodity demands and balance of payment goals which influence policy decisions on land use.

LEM allows planners and policy-makers to explore regional objectives and determine the strategic importance of various uses for certain land areas. When fully developed, LEM will be able to study these potential changes and examine how these changing conditions alter land use options.

Location: 01.

81.152

Gierman, D.M.; MacDonald, Connie L.; **Land Use Monitoring in the Urban Centered Regions of Canada and the Canada Land Data System, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.294-306.

Abstract: This paper describes the Urban Centered Regions (UCR) component of the Canada Land Use Monitoring Program (CLUMP) of Environment Canada and its use of the Canada Land Data System (CLDS), for storing land use data, overlaying this data with land use from different time periods and other mapped data, analysing the data and/for providing various means for interrogating and formats for retrieving the desired data.

The paper will also look at future developments in the UCR component and in CLDS and the resulting changes in the interaction between them.

Location: 01.

81.153

Webb, R. Pat; **A Synopsis of Natural Resource Management and Environmental Assessment Techniques Using Geographic Information System Technology, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.334-353.

Abstract: The use of Geographic Information Systems for Natural Resource Management and environmental assessments is an emerging tool of the future. For many years agencies have been actively involved in data collection with few applications other than regurgitation of maps or simple overlays. The quality and quantity of data in these technical areas has greatly increased in recent years as well as the number of types of applications. This paper presents the tip of the iceberg in data collection and application efforts currently being conducted in the United States.

Location: 01.

81.154

Ader, Robert R.; **A Geographic Information System for Addressing Issues in the Coastal Zone, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.353-369.

Abstract: Throughout the decade of the 1980s coastal resources of the United States will experience unprecedented pressure for development. The National Coastal Ecosystems Team of the U.S. Fish and Wildlife Service has been compiling existing information for coastal areas in the form of coastal characterizations and has recognized the need to implement a computerized delivery system for applying this information to coastal issues. The purpose of this paper is to discuss the evolution of NCET's geographic information system and its ability to address coastal development issues.

Location: 01.

81.155

Berkun, Kenneth; Juhasz, Thomas C.; **Environmental Databases for Management Decisions: Alaska, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.370-388.

Abstract: The Alaska Department of Environmental Conservation has completed a conceptual design for an environmental database to support the entire department in monitoring, tracking and reporting functions. SCS Engineers has performed an evaluation of the design. This paper presents the results of that evaluation.

Special emphasis is placed on the problems of designing and implementing such a system, and proposed solutions to those problems. Particularly important are methodologies for allowing the data to be shared among multiple users within the department. This paper discusses several techniques designed to allow maximum utility of the system.

Location: 01.

81.156

Wilson, John; **State Natural Resources Programs - The Texas Experience, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses,** (at: Annual Conference of the Urban and Regional Information Systems Association at New Orleans, Louisiana) 1981 pp.389-399.

Abstract: The TNRIS (Texas Natural Resources Information System) is a mechanism in Texas state government which links together the users of natural resources and related data with those organizations which collect and store the data. TNRIS is an extension of the Texas Water Oriented Data Bank which began in 1967. It provides access to data in six major categories - water, socioeconomic, biological, meteorological, geologic and land, and base data to users in government, education and the non-public sector. Data indexing, on-line data access, interface with other systems, and development of computer software are areas of major TNRIS involvement. Accesses to data and information files

available through TNRIS numbered 4,706 during the State's 1980 fiscal year.
Location: 01.

81.157
Waters, N.M.; **Computer Mapping: A Review of What is Available and What is Useful for Exploration Purposes,** (in: Bull Can Petrol Geol, Vol.29, no.2) (Canadian Society of Petroleum Geology) 1981, June pp.182-196.

81.158
Lee, P.J.; **The Most Predictable Surface (MPS) Mapping Method in Petroleum Exploration,** (in: Bull Can Petrol Geol, Vol.29, no.2) (Canadian Society of Petroleum Geology) 1981, June pp.224-240.

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Location: 07.

81.160
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Johnson, Timothy R.; **Evaluation and Improvement of the Geographic Information Systems Design Model,** (State University of New York) 1981.

81.162
Tomlinson, Roger F., Ed.; Boyle, A. Raymond; **The State of Development of Systems for Handling Natural Resources Inventory Data,** (in: Cartographica, Vol.18, no.4) 1981 pp.65-95.

81.163
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Peuquet, Donna J.; **An Examination of Techniques for Reformatting Digital Cartographic Data PART22 The Vector-to-Raster Process,** (Resource Planning Analysis Office, United States Department of Interior) 1981.

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Samet, Hanan; **Computing Perimeters of Regions in Image Represented by Quad-trees,** (in: IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol.3, no.6) 1981, November pp.683-687.

81.168
Samet, Hanan; **An Algorithm for Converting Rasters to Quad-trees,** (in: IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol.3, no.1) 1981, January pp.93-95.

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Zobrist, Albert L.; Nagy, George; **Pictorial Information Processing of Landsat Data for Geographic Analysis,** (in: COMP, Vol.14, no.11) 1981 pp.34-41.

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Foote, H.P.; Blair, S.C.; Wukelic, G.E.; Coburn, V.L.; **Analyzing and Mapping Regional Land Use Trends by Combining Landsat and Topographic Data,** (at: International Geoscience and Remote Sensing Symposium) 1981 pp.1437-1442.

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81.179

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81.183

Lennon, John F.; Papa, Robert J.; **An Error Analysis Technique for Statistical Hypothesis Testing. Generation of Jointly Distributed Random Variates**, (Rome Air Development Center) 1981.

Abstract: As a part of the study of electromagnetic scattering from rough terrain, various geographical sites were characterized by applying statistical analysis techniques to digitized terrain date bases. One aspect was the use of decision theory formulation to assign an appropriate distribution function to the surface height variations in the regions. This report discusses the decision processes used and the errors to be expected. There are two main themes: assessment of statistical hypothesis testing and application of a numerical technique to determine the errors inherent in the decisions. There are a number of assumptions and constraints that affect the form of the hypothesis test developed for the terrain study and these will be considered. The numerical technique consists in generating jointly distributed random variates in a Monte Carlo type computer procedure. Its application to the specification of decision errors will be described. The formulation allows extension of standard analytic error analysis techniques to cases where the analysis would be intractable. Results are presented and the agreement with analysis for various cases is shown. (Author)

81.184

Milazzo, V.A.; **The Role of Change Data in a Land Use and Land Cover Map Updating Program, Remote Sensing: An Input to Geographic Information Systems in the 1980s**, (at: Pecora VII Symposium of American Society of Photogrammetry at Falls Church VA, USA) 1981 pp.189-209.

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Myers, W. L.; **Integration of Remotely Sensed Data Into Geographic Information Systems, Remote Sensing: An Input to Geographic Information Systems in the 1980s,** (at: Pecora VII Symposium of American Society of Photogrammetry at Falls Church VA, USA) 1981 pp.3-14.

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Nichols, David A.; **Conversion of Raster Coded Images to Polygonal Data Structures,** (at: Pecora VIII, Sioux Falls SD, USA) 1981.

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Dushene, Wallace A.; **Users' Manual: Ridspoly Geographic Information System,** (U.S. Information, Forest and Range Exploration Station) 1981.
Location: 12.

81.190
Philips, Richard L.; **Low Cost Computer Graphics in Engineering Education, Computer and Education,** (Pergamon Press) 1981 pp.193-200.

Abstract: The Apple II is a personal computer which provides 6 color, raster graphics via 280 x 192 frame buffer. This system has been evaluated in a variety of applications for which one normally assumes higher resolution, higher cost graphics devices are needed.

Examples were drawn from computer aided design, color microfilm previewing, cartography and air synthesis. The results were encouraging.

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81.199
Brassel, Kurt E.; Wasilenko, M.; **Vol. 3 - Cartography and Graphics**, (series: Computer Software for Spatial Data Handling), (U.S. Department of the Interior) 1981.

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81.201
Symons, D.C.; **Information System for Urban Planning**, (Information Services, National Capital Commission) 1981.

Abstract: 1. Data Base: consists of municipal census and assessment records, street files; event files such as vital statistics, fire calls and related social data. Because the data will be collected in its most disaggregated form, it is expected that approximately 400 million characters of data will be recorded each year. Parcel Geocodoing: the data at each ownership parcel will be geographically located by two seven-digit numbers which represent the 3 UTM grid. The geocoding system describes streets, intersections, and individual ownership parcels. 3. Retrieval System: a generalized file management/file retrieval system is under development which will use an English-like command language. 4. Graphic Display System: the use of coordinates for property identification creates a data base suitable for computer mapping. Data has been mapped using SYAP, Plot 3-D, line graphs as well as line drawn property ownership.

81.202
McLaughlin, John; **Evolution and Current Status of Maritime Land Registration and Information Service, Cartographic Data Bases and Software,** (Harvard Library of Computer Graphics) 1981.
Location: 45.

81.203
Environmental Conservation Service Task Force Federal Environment Assessment Review Office (FEARO). **Ecological Land Survey Guidelines for Environmental Impact Analysis,** 1981.
Location: 27.

81.204
Warren, John; **Airborne Infrared Forest Fire Surveillance - A Chronology of USDA Forest Service Research and Development,** 1981.
Location: 20.

81.205
Chu, Wen-Sen; **Mathematical Modeling and Parameter Identification in a Two-Dimensional Estuary: Case Study of the Hydraulic Model of the San Francisco Bay and Delta,** (California University Water Resources Center) 1981.
Location: 20.

81.206
Canada. Department of Agriculture. Research Branch. **Land Systems Mapping and Field Pattern Analysis in an Agricultural Area, Wynyard, Saskatchewan,** (Dept. of Agriculture, Research Branch) 1981.
Location: 20.

81.207
Roitt, Daryll D.; **Computerized System for Estimating and Displaying Shortrun Costs of Soil Conservation Practices,** (Dept. of Agriculture) 1981.
Location: 20.

81.208
Nuernberger, Carol A.; **User's Guide to SUDA: A Computerized Data Bank for Sorption Coefficients of Radionuclides on Geological Material,** (Atomic Energy of Canada Ltd.) 1981.
Location: 20.

1982
CITATIONS

CITATIONS

82.001

Grygorenko, Wicktor; **A Statistical Method for the Determination of the Density of Objects on Maps,** (in: Geodezja i Kartografia, Vol.31, no.1) 1982 pp.43-58.

Abstract: Investigations into the distribution of objects in geographical space show the influence of stochastic processes. This means that statistical methods can be used to calculate the character of differentiation in density of graphic signs in particular parts of a map. This necessitates prior schematization of the description of geographical space, which includes among other things, calculation of the indices of quantitative differentiation in the graphic signs included in the composition of particular content elements in different parts of the maps. The formulae for calculating the probabilities of signs appearing in the map are given, and lead to a general theory of the selection of cartographic information for the representation of the map.

82.002

Zwart, P.; **Some Suggestions for Improving the Cost Structure of Integrated Survey Systems,** (in: Australian Journal of Geodesy, Vol.37,) 1982, December pp.79-99.

Abstract: A number of factors have inhibited the creation of dense networks of control as the foundation for a system of integrated surveys. Chief amongst these is the cost of establishing the control and the nature of these costs. The detailed costs provided by the Land Registration and Information Service (LRIS) of the Maritime Provinces of Canada is the best indicator to date of the actual costs and benefits of establishing a near complete integrated survey system in a developed country. The paper analyses the costs and benefits identified by the LRIS studies and as a result proposes a strategy to implement the integrated survey concept which minimizes costs and provides a favourable benefit structure.

82.003

Canadian Council on Surveying & Mapping. **National Standards for the Exchange of Digital Topographic Data,** (Surveys & Mapping, Energy, Mines & Resources) 1982.

82.004

Kilgour, A.C.; **A Span-Line Approach to the Polygon Intersection Problem,** (Special Interest Group on Computer Graphics, Assn. for Computing Machines) 1982.

Abstract: An algorithm is presented which constructs the bounding polygonal sheets for the union and intersection of two or more general polygons (which need not be simple). Advantage is taken of the inherent ordering of edges in the input polygons to avoid the need for a preliminary sort of all edges. Instead, only vertices which are local maxima with respect to their owning sheets need be sorted. The construction of the output sheets proceeds in parallel with the detection of edge intersections, using a span-line approach which processes vertices and intersections in decreasing order of y, maintaining in addition an x-ordered list of active edges. The algorithm has time efficiency of $0((n+p+k)\log p)$ where n is the total number of input vertices, p is the number of vertices which are local maxima, and k is the number of edge intersections. For two convex polygonal sheets this reduces to $0(n)$, which is optimal. In general the complexity depends on the complexity of the input polygons (as indicated by p) and the degree of their interference with each other (signified by k). The algorithm may also be used to check a single polygon for self intersections, or to find the symmetric difference of two polygons.

82.005

Billingsley, F.C.; **The Landsat Computer-Compatible Tape Family**, (at: Picture Archiving & Communication Systems (PACS) for Medical Applications) 1982.

Abstract: The increasing need for distribution of images between generating centers and the desirability of using the images within digital analysis systems and digital data bases has led to the need for standardized formats which self-document the image structure while minimizing the overhead and maximized the format clarity. For Landsat, such a format has been defined. It is currently in use in Canada, and will be initiated in the U.S. with the advent of Landsat-D in the fall of 1982. Although initially defined for Landsat, the family has specifically been designed to accommodate images from any source, of any size, and with any internal logical structure. For example, the (implied) two dimensional matrix of data points may be alphanumeric records, outline drawings, point data or data tables as well as imagery. The format family is open ended in that future specific formats may be generated by the use of pre-specified organization rules. The required standard superstructure information provides the roadmap through the data. The format will accommodate multiple images per logical volume, multiple tapes per logical volume, and multiple logical volumes on a given tape.

82.006

Peery, Jerry N.; **Implementation of a Grid-Based Line-Drawing Quantization System**, (Air Force Inst. of Tech. School of Engineering.) 1982.

Abstract: The object of this thesis is to develop a system that can be used to implement and evaluate various grid intersect codes. Grid intersect codes are used in line drawing quantization schemes which provide specialized methods for encoding drawings which consist solely of thin lines on a contrasting background. Examples of such drawings include weather maps, blue prints, and English text. The system will consist of a NOVA 1200 computer and digitizer. The digitizer consists of a sketch pad, a pen, and the electrical circuitry to determine the location of the pen relative to the sketch pad. The position of the pen is converted to digital information that is used as the input to the computer. The computer can use this data to implement various grid intersect algorithms. This thesis discusses the design of the interface of these separate components into a system. (Author)

82.007

Rutz, R.A.; Fields, D.E.; Oak Ridge National Laboratory, TN.. **Development and Application of an Image Analyzing and Processing System**, (at: ACM Regional Meeting at Knoxville TN.) (Department of Energy) 1982.

Abstract: This paper summarizes the development of an image analyzing and processing system which is designed to determine particle size and particle size distribution of materials that have been transported atmospherically and Hydrologically. The system, consisting of a redesigned microscope, a standard television camera, a Micro Works DS-65 DIGISECTOR video digitizer and a TRS-80 computer, was constructed. The modified DS-65 was built as a peripheral device which converts the analog signal of the television camera to a digital signal and transfers the data through software control to the TRS-80. A machine language program was written to control the digitization and transfer of data. A BASIC language program, SCAN, automatically determines the particle size and particle size distribution. A new portion of the sample can be analyzed by adjusting two micrometers attached to the stage of the microscope. These micrometer adjusting screws allow accurate movement of the sample within a horizontal plane. The results of consecutive scans are accumulated and the distribution is plotted as a bar graph. Representative particle diameters, limited by microscope resolution, are on the order of 10 microns or greated in magnitude. Samples of particulates were tested and the results will be presented at the ACM Regional Meeting in Knoxville, Tennessee on April 1-3, 1982. (ERA citation 07:047979)

82.008

Khorram, Siamak; **Development of a Remote Sensing-Aided Digital Databank for Large Scale Land Use Planning,** (at: International Symposium on Remote Sensing of Environment (16th) at Buenos Aires, Argentina) (North Carolina State Univ.) 1982.

Abstract: The primary objective of this investigation was to combine remotely-sensed data with ground-acquired data in development of a procedure specifically for selection of a site for urban development and generally for large scale land use planning. The study area, jointly selected by the resource managers and researchers, is approximately 500 sq km in size and covers the Frenchman Reservoir basin in northeastern part of the Sierra Nevada Mountains of California. The approach involved a spatially-referenced databank based on both remotely-sensed and ground acquired data. The remotely-sensed data included Landsat Multispectral Scanner (MSS) data, NOAA-5 satellite Very High Resolution Radiometer(VHRR) data, and U-2 color infrared photography. The ground-acquired data included USGS topograpic maps, Defense Mapping Agency (DMA)/USGS digital terrain data, soils maps, vegetation data, and accessibility maps.

82.009

Mussakowski, R.S.; **Technique for Mapping Environmental Change Using Digital LANDSAT Data,** (at: International Symposium on Remote Sensing of Environment (16th) at Buenos Aires, Argentina) (Ontario Centre for Remote Sensing) 1982 pp.249-251.

Abstract: Digital LANDSAT data is well suited to the monitoring of certain aspects of environmental change because of the comprehensive coverage of individual frames (185 km x 185 km), the repetitive nature of the coverage (on an 18-day cycle), a classification, and the multispectral character of the data, which is digitally recorded and thus readily amendable to analysis using current computer techniques. In order to develop a LANDSAT-based procedure for mapping environmental change, variations in vegetation density were analyzed and compared on LANDSAT scenes from different years. The area selected for study was the region surrounding the city of Sudbury, an industrial, mining and smelting centre in the province of Ontario, Canada. The terrain of the site is glaciated Precambrian shield covered by a thin layer of drift. The site is located in the Great Lakes-St. Lawrence forest region.

82.010

Tabei, M.; Nakamura, Y.; **Software for Transformation and Map Drawing of Numerical Informations of Land,** (Japan Atomic Energy Research Inst.) 1982.

Abstract: A software for transformation and map drawing of numerical Informations for land has been developed. The software can be easily used to make topographical data and draw maps in large computing codes such as computing system for predicting environmental radioactivity in case of emergency. In this report, theory of transformation of numerical Informations for land by map projection, structure of the software, and a few examples to which the software is applicable, are described in detail. (Atomindex citation 14:751850)

82.011

Shinn, R.D.; Westerlund, F.V.; Eby, J.R.; WASHINGTON UNIVERSITY. **The 1980 Land Cover for the Puget Sound Region,** (National Aeronautics and Space Administration) 1982.

Abstract: Both LANDSAT imagery and the video information communications and retrieval software were used to develop a land cover classification of the Puget Sound of Washington. Planning agencies within the region were provided with a highly accurate land cover map registered to the 1980 census tracts which could subsequently be incorporated as one data layer in a multi-layer data base. Many historical activities related to previous land cover mapping studies conducted in the Puget Sound region are summarized. Valuable insight into conducting a project with a large community of users and in establishing user confidence in a multi-purpose land cover map derived from LANDSAT is provided.

82.012

Harper, Peggy; Schwarz, Charles R.; **UTMDIR: Computation of UTM (Universal Transverse Mercator) Coordinates,** (National Geodetic Survey) 1982.

Abstract: The program uses the Clarke 1866 spheroid in computing latitude and (west) longitude, zone, universal transverse mercator coordinates, convergence, and scale factor. Software Description: The program is written in the FORTRAN programming language for implementation on an IBM 370/195 computer using the OS operating system. Computer memory requirements is 100K.

82.013

Babby, P.; Gillis, James W.; Griesel, Martha Ann; Palmer, N.; Radbill, John R.; **U.S. Army Intelligence Center & School USAICS, Software Analysis & Management System Analysis of Geographic Transformation Algorithms,** (Jet Propulsion Lab) 1982.

Abstract: This report describes the findings of the Algorithm Analysis Subtask group working on the U.S. Army Intelligence Center and School (USAICS) Software Analysis and Management System Task (USAMS) regarding geographic transformation algorithms used in four of the intelligence-gathering systems under USAICS cognizance. In this report a set of parameters is developed to characterize and catalgue intelligence system algorithm in four specific systems. Individual algorithms are analyzed to determine whether they are performing their functions properly. Algorithms that perform the same function in different systems are compared to determine which ones are best according to various criteria. The algorithms examined in this report are taken from the MAGIIC, Guardrail, Trailblazer, and BETA systems. They were chosen from the approximately 41 deployed intelligence systems for which USAICS is Combat Developer because their documentation was quickly accessible and because they represented a range of algorithm applications. Geographic transformation (mapping) algorithms were chosen for this report since all four systems contain position location/description functions and many of their algorithms are unclassified.

82.014

Utah University. Center for Remote Sensing and Cartography. **Identifying Environmental Features for Land Management Decisions,** (National Aeronautics and Space Administration) 1982.

Abstract: The major accomplishments of the Center for Remote Sensing and Cartography are outlined. The analysis and inventory of the Parker Mountain rangeland and the use of multitemporal data to study aspen succession stages are discussed. New and continuing projects are also described including a Salt Lake County land use study, Wasatch-Cach riperian study, and Humboldt River riperian habitat study. Finally, progress in digital processing techniques is reported.

82.015

Olsson, L.; Eklundh, J.O.; Nyberg, S.; Foersvarets Forskningsanstalt. **Creation of a Road Database from MAP Overlays,** (National Aeronautics and Space Administration) 1982.

Abstract: This study concerns the development and implementation of programs which search an image file consisting of roads, houses and borders. The roads in the image are detected, classified and tracked. Output from the programs are road segments and their corresponding polygons.

82.016

Van Est, Jan; De Vroege, Frans; **Meaning and Construction of a Geographic Base File for a Spatially Oriented Information System**, (Planologisch Studiecentrum TNO) 1982.

Abstract: In this paper the special meaning of the spatial dimension of a spatial-oriented information system will be discussed. In the second section the meaning of a map for such a system will be considered and the necessary conditions will be given. In the third section the construction itself will be outlined. In the Netherlands, many municipalities already have computerized files, showing street-side characteristics, which in fact are part of a segmented geographic base file. The consequences of their existence for construction the files concerned were studied in a feasability study for the city of Rotterdam. A summarized version of this will be presented in section four. In section five the framework of a spatial-oriented system will be outlined. The paper will be concluded with some findings from the Rotterdam study.

82.017

Van Est, Jan; De Vroege, Frans; **Data Source and Information Carrier as a Base for a Spatial-Orientated Information System**, (Planologisch Studiecentrum TNO) 1982.

Abstract: In this paper the necessary conditions for a proper introduction of the spatial dimension will be further elaborated. In the second section the planning environment and consequences thereof will be outlined. The problems with the registration of data will be discussed in section three, while the aspects of a data carrier will be discussed in section four. In section five the framework of a spatially orientated information system will be outlined. This paper will be concluded with the presentation of a few examples.

82.018

Satterwhite, Melvin B.; **Vegetation and Terrain Effects on Digital Classification of LANDSAT Imagery**, (Army Engineer Topographic Labs.) 1982.

Abstract: LANDSAT scenes from the northern Chihuahuan Desert, south-central New Mexico and western Texas, taken in March and August, 1975, were analyzed using conventional supervised digital image analysis techniques. The study objective was to evaluate the digitally classified LANDSAT image against known ground condition and determine those vegetative and terrain factors that could aid the manual interpretation of the classified image. The interpretation of the image and correct classification of most areas were greatly assisted by knowledge of plant community-landform relations, the species phenological and physiognomic characteristics, and the reflectance-cover relations for the soil and vegetation conditions in each scene.

82.019

Samet, Hanan; Rosenfeld, Azriel; Maryland University, Computer Vision Lab.. **Application of Hierarchical Data Structures to Geographical Information Systems**, (Army Engineer Topographic Labs.) 1982.

Abstract: This project is concerned with the applicability of a class of hierarchical data structures, known as 'quadtrees', to the representation of cartographic data. Section 2 presents a tutorial on quadtree data structures. Section 3 describes the database used, and the process of digitizing and editing it. Section 4 describes the process of quadtree encoding of the data, including algorithms and space/time/acreage tables. Section 5 discusses region analysis and manipulations using quadtrees, including algorithms and tables (time, etc.). The algorithms implemented include set theoretic operations on regions, point-in-region determination, region property measurement, and construction of submaps and merged maps. Section 6 presents a bibliography on quadtrees.

82.020

McKeown, Jr., David M.; **Concept Maps,** (at: Image Understanding: Workshop at Palo Alto, CA) (Carnegie-Mellon University, Department of Computer Science) 1982.

Abstract: This paper describes a representational mechanism for constructing 3-dimensional large scale spatial organizations suitable for applications in areas such as cartography and land use studies, photo interpretation for reconnaissance and surveillance, and geological modeling for resource analysis. It focuses on the representation and utilization of map information as a knowledge source for photo-interpretation, in particular, the description of a highly detailed, large scale geographic area: Washington, D.C. Methods of data acquisition, query specification and geometric operations on map data are discussed. These ideas have been implemented into a working map database system, CONCEPTMAP, as a component of MAPS: (Map Assisted Photo-interpretation System). Our ongoing research in interactive photo-interpretation work stations. (Author)

82.021

Medioni, Gerard G.; **Matching Linear Features of Images and Maps,** (at: Image Understanding: Workshop at Palo Alto, CA) (University of Southern California, Department of Computer Science) 1982.

Abstract: We present two methods to solve the problem of matching linear features extracted from an aerial image with a set of linear features derived from a map or another view of the same scene. The first method, using discrete relaxation, is very efficient but requires the model to have a small number of elements. The other one, called the kernel method, demonstrates how drastically we can improve the running time if we know a few pairs of matched elements. Illustrative examples are provided, and extensions are discussed. (Author)

82.022

Webster, Royal; Moellering, Harold; **INTAHILS: An Interactive Analytical Hill Shading System Using Entropy as an Information Statistic,** (Defense Mapping Agency Aerospace Center) 1982.

Abstract: The interactive computer mapping system, INTAHILS, allows the user to generate analytical shaded relief maps. Selected algorithms have been chosen to utilize Digital Terrain Matrix data and display the shaded relief image in a virtual map or softcopy format. Various commands are used to interactively edit or change the image by altering the illumination source angles in selected local areas of the map image. Specific topographic features may then be enhanced, resulting in a more informative visual impression of the terrain. The information statistic is measured numerically by calculating the entropy of the map information presented. The process thus allows for a maximization of information presented, while minimizing the subjective bias of the cartographer. Good man-machine communication principles were utilized, resulting in a convenient and user-friendly system.

82.023

Huber, William A.; **Automated Map Display Alignment,** (Department of the Army) 1982.

Abstract: Apparatus and a method are shown for automatically aligning a map with fixed topographic and other features therein with an underlying display on which appear electronically produced symbols which must register with the map features. The misalignment of the map is automatically sensed and measured and the positions of all of the display symbols are shifted by an amount equal to the map's misalignment, so that the map and the display information are brought into proper registration. (Author)

82.024

Christensen, N.C.; Bendix Corp.. **BRUTE**, (at: National Computer Graphics Association Conference at Anaheim, CA, USA) (Department of Energy) 1982.

Abstract: BRUTE is an algorithm to derive the implied boundary of a piecepart from the part's wireframe representation. BRUTE's input is an IGES file. The geometry is extracted and used to derive the edge-vertex (EV) topology. BRUTE then uses a divide-and-conquer method to derive all reasonable face-edge-vertex (FEV) topologies from the EV topology. The final step is to determine the geometry of each face by using the geometry of its edges. Any FEV topology that contains a face that is not a valid surface type is rejected. Valid surface types are plane, cylinder, cone, and sphere. (ERA citation 07:048889)

82.025

Canada. National Research Council. **Modernization of the Public Land Survey System,** (Department of the Interior) 1982.

Abstract: The report encourages the modernization of The Public Land Survey System for use in mapping and densification of geodetic control primarily for land information systems and the multiple Cadastre.

82.026

Eber, Laurence E.; **Environmental Data Contouring Program EDMAP2,** (National Marine Fisheries Service, Southwest Fisheries Center) 1982.

Abstract: This program was designed for computing two-dimensional contour plots of environmental data fields defined at grid points on a rectangular grid. It is written in Burroughs B7800 ALGOL and consists of five components which include a host program and four external procedures. These must be linked together with the System BINDER program for execution.

82.027

National Technical Information Service. **Side Looking Radar 1970-November, 1982 (Citations from the NTIS Data Base),** (National Technical Information Service) 1982.

Abstract: This bibliography contains citations concerning the use of Side Looking Radar as it applies to geological surveys, ice drift, and natural resource mapping. Special emphasis is placed on the use of satellites for mapping of remote areas. The design and operation of Side Looking Radar are discussed and include signal processing, pattern recognition, antennas and maintenance and calibration. (This updated bibliography contains 194 citations, 15 of which are new entries to the previous edition.)

82.028

Thompson, Michael R.; Socher, Robert M.; **Digital Terrain Analysis Station (DTAS),** (Army Engineer Topographic Labs.) 1982.

Abstract: Battlefield commanders in today's Army need timely, accurate terrain analyses. Modern tactical realities do not give the commander time for manual preparation of map overlays and other graphic products from varied and voluminous sources. The commander must have up-to-date graphic displays and overlays highlighting tactically vital terrain features and battle/combat advantages resulting from terrain configurations. These factors, combined with the advances in computer technology and data base management, indicate that a computer-assisted terrain analysis capability is feasible and needed by the Army. The terrain analysis capabilities of the DTAS produce graphic products that fall generally into two major areas: Intervisibility and Mobility. The products may be displayed on the DTAS viewing screens or drawn to scale on the DTAS plotter. They may stand alone or be used in compiling other products. The intervisibility capabilities are used to determine areas that are visible, either optically or electronically, from a given site. These capabilities have the user-selectable option of including vegetation heights in the analysis. The mobility capabilities are used to evaluate the potential effects of terrain upon friendly and enemy operations.

82.029

Davis, Dale M.; Downing, James A.; Zoraster, Steven; Zycor, Inc.. **Algorithms for Digital Terrain Data Modeling,** (Army Engineer Topographic Labs.) 1982.

Abstract: Algorithms and test results are described for three different general operations used in computerized modeling and mapping. The algorithms are used for transforming strings of contour data into digital elevation models (DEM), transforming DEM's into a set of contour strings for display, and smoothing DEM's using several filtering and convolution techniques. The use of DEM smoothing operations for the simplification of contour lines is examined and two methods of controlling filter effects for this application are presented. As a separate research effort two interpolation algorithms which can be used for resampling DEM's are compared. Visual and statistical measures of performance are presented. (Author)

82.030

Crombie, Michael A.; Shine, James A.; **An Analysis of a Relaxation Scheme to Improve Terrain Elevation Data,** (Army Engineer Topographic Labs.) 1982.

Abstract: Elevation matrices derived from correlation of digital stereo images often contain errors resulting from a breakdown of the correlation process. One such matrix was corrected using a relaxation algorithm where each point was given a reliability based on comparison with its nearest and next-nearest neighbors. These reliabilities were then used to determine if and how much a point was to be corrected; the process was iterated. The algorithm removed small error areas, but large erroneous regions were not corrected, even when terrain slope classification information was considered. (Author)

82.031

Nevatia, Ramakant; University of Southern California. **Image Understanding Research,** (Air Force Wright Aeronautical Labs.) 1982.

Abstract: This report describes techniques for symbolic matching of aerial images with other images or maps. Aerial images contain natural features and also man-made 3-D structures. Techniques for scene segmentation and description for these matching tasks are presented. (Author)

82.032

Balazs, Emery I.; Young, Gary M.; **Corrections Applied by the National Geodetic Survey to Precise Leveling Observations,** (National Geodetic Survey) 1982.

Abstract: The six corrections applied by the National Geodetic Survey to precise leveling observations are described. These corrections are applied to observed leveling data to minimize the effects of known systematic errors. The rod scale correction ensures a uniform scale which conforms to the National length standard. The rod temperature correction accounts for variation in the length of the leveling rod's Invar/LO-VAR strip which results from temperature changes. The level collimation correction minimizes the error caused by nonhorizontality of the leveling instrument's line of sight for unequal sight lengths. The refraction correction is modeling to minimize the refraction error caused by temperature (density) variation of air strata. The astronomic correction counteracts the effects of the Moon and Sun on the equipotential surfaces of the Earth. The orthometric correction eliminates the effect of the nonparallelism of equipotential surfaces. The height system presently used at the National Geodetic Survey and those height systems proposed for the future are also described.

82.033

Spofford, Paul R.; Dracup, Joseph F.; Fronczek, C.J.; Tomlinson, Roger F., Ed.; **Establishment of Calibration Base Lines (Revised),** (National Geodetic Survey) 1982.

Abstract: The calibration of electronic distance measuring instruments involves the determination or verification constants and the assurance that the measured distances meet accuracy specifications. Although it is not necessary to use a measured distance to determine or verify instrument constants, the verification effort is reduced when an accurately measured distance can be used. However, to assure that the measuring capabilities of an instrument have not significantly deteriorated, a known distance of high accuracy or, preferably, a sequence of distances forming a calibration range or base line is required. Experience shows that a base line consisting of four on-line monuments spaced at intervals of 150m, 400 to 430m, and 1000 to 1400m will meet the needs of most users. Specifications and recommended procedures for establishing calibration base lines are described in detail.

82.034

Jacober, Robert P. Jr.; **Standardization of Map Symbology,** (Defense Mapping Agency Aerospace Center) 1982.

Abstract: In order to effectively communicate, man must have a common language. In the conventional or digital cartographic sphere, this axiom is no less true. Symbols form the language of cartography. Ideally, a worldwide standard set of symbols would solve many of the communication problems. But, this ideal solution is not technically feasible. However, within scale families of maps, standard symbology should be sought, especially in computer cartographic applications. This paper addresses the need for a standard for map symbology, particularly large scale maps, and suggests such a standard. (Author)

82.035

Shelberg, Mark C.; Moellering, Harold; Lam, Nina; **Measuring the Fractal Dimensions of Empirical Cartographic Curves,** (Defense Mapping Agency Aerospace Center) 1982.

Abstract: This paper discusses an algorithm, which simulates walking a pair of dividers along a curve, used to calculate the fractal dimensions of curves. It also discusses the choice of chord length and the number of solution steps used in computing fracticality. Results demonstrate the algorithm to be stable and that a curve's fractal dimension can be closely approximated. Potential applications for this technique include a new means for curvilinear data compression, description of planimetric feature boundary texture for improved realism in scene generation and possible two-dimensional extension for description of surface feature textures.

82.036

Johnston, Gerald Walter; **Image Processing of Digital Cartographic Data,** (at: XII Assembly Pan American Institute of Geography and History, in Santiago, Chile 1982) (Defense Mapping Agency Aerospace Center) 1982.

Abstract: The Cartographer has long been interested in depicting surface features of the earth as a pictorial representation. This representation has normally consisted of pen and ink drawings in an easily referenced format. The ability to assure both quality and accuracy became two of the primary concerns of the Cartographer in the production of maps and charts. This paper details the rapid advancement of Cartography through the introduction of micro and minicomputers in the management and quality accuracy determinations of digital elevation and cultural information. Advantages and disadvantages of the new processing techniques are clearly stated. The algorithms and programming techniques are discussed with emphasis placed on resultant enhancements utilized by the cartographic analyst. The major theme for this paper is the methods used at DMA to review the digital data bases through the use of the Image Manipulation Station. System configuration, components, software development and image utilization are discussed. These comments are directed toward the various images (gray-coded, shaded relief) and the quality assurance verification techniques associated with the image enhancements. (Author)

82.037

National Conference of State Legislatures. **A Legislator's Guide to Landsat,** (National Aeronautics and Space Administration) 1982.

Abstract: The LANDSAT satellite is an effective tool in meeting the natural resources data requirements of state and federal legislation. The availability of data from the satellite is beginning to have an impact on state legislature activities. An overview of the history, operation, and data analysis techniques, is presented as well as a discussion of the advantages and limitations of this method of remote sensing. Applications are discussed in the areas of (1) land resource planning and management; (2) coastal zone management; (3) agriculture; (4) forestry; (5) routing and siting; (6) environmental monitoring; and (7) geological exploration. National and state sources from which information about LANDSAT technology is available are listed.

82.038

Bell, Paul D.; Kolassa, David A.; Terenzetti, Joan A.; Synectics Corp.. **Advanced Cartographic Data Digitizing System,** (Rome Air Development Center) 1982.

Abstract: This report describes the Advanced Cartographic Data Digitizing system functional capabilities as a complete digital cartographic system. Topics from data digitizing through product generation including overall system description, hardware configuration, host processor software and work station software are covered. In addition, the report describes avenues of system expansion if these are deemed appropriate by the Defense Mapping Agency. (Author)

82.039

Congalton, Russell G.; Oderwald, Richard G.; Mead, Roy A.; **Accuracy of Remotely Sensed Data: Sampling and Analysis Procedures,** (Virginia Polytechnic Inst. and State Univ.) 1982.

Abstract: The report is divided into two parts. The first part presents a review and update of the discrete multivariate analysis techniques used for accuracy assessment. Appendix A contains a listing of the computer program written to implement these techniques. The second part presents new work on evaluating accuracy assessment using Monte Carlo simulation with different sampling schemes. Appendix B contains the results of the accuracy assessment analysis for the eight error matrices from the mapping effort of the San Juan National Forest. Appendix C contains a method of estimating the sample size requirements for implementing the accuracy assessment procedures. Appendix D contains a proposed method for determining the reliability of change detection between two maps of the same area produced at different times.

82.040

Chen, Pi-Fuay; Rohde, Frederick W.; Seemuller, William W.; **Classification of Cartographic Features through Walsh Transforms,** (Army Engineer Topographic Labs) 1982.

Abstract: An algorithm was used to classify and recognize a set of selected cartographic features, such as road intersections, straight-line roads, and rectangular objects, which were decomposed in the Walsh transform domain. The method was implemented digitally with an experimental system consisting of a solid state sensor array, a minicomputer as signal processor, and a computer-controlled translational stage as the image holder. Recognition examples for the set of cartographic features with respect to the window of inspection are presented. Nearly 90 percent recognition accuracy was obtained for the selected set of the cartographic features. (Author)

82.041

Goyert, J.C.; Daniels, K.L.; Strand, R.H.; Farrell, M.P.; Oak Ridge National Laboratory, TN.. **Cartographic Evaluation of Environmental-Management Strategies**, (at: SAS Users Group International Meeting at San Francisco CA) (Department of Energy) 1982.

Abstract: A complex problem in environmental research is the evaluation of the effects of various environmental management strategies at regional, ecosystem, population and community levels. The large amount of data generated in these evaluations needs to be presented in a form that allows decision makers at state or federal levels to knowledgeably act on the information. A series of computer-generated maps with increasing levels of resolution can be used to summarize these data and more clearly illustrate the potential effects of various decision alternatives. A number of graphic displays are presented to illustrate how policy decisions concerning California water allocation can affect salinity distribution and aquatic plant communities in San Francisco Bay. The graphic displays include a vendor-supplied coordinate map for the regional level, a bench-digitized coordinate map for the ecosystem level, and a program-generated coordinate map for the community level.

82.042

Huber, William A.; **Unidirectional Code for Interactive Map System**, (Department of the Army) 1982.

Abstract: A system for plotting information on maps and reading information therefrom comprising maps which have machine-readable codes on the backs thereof arranged to indicate the coordinates of the map. A stylus is adapted to be moved over the map surface to read the map coordinates by sensing the codes thereon. The novel unidirectional codes comprising code bars all extending in the same direction permit the use of simplified code sensing apparatus. (Author)

82.043

Rosenthal, Richard L.; **A Digital Technique for Constructing Variable-Width Lines**, (Army Engineer Topographic Labs) 1982.

Abstract: This paper describes a digital technique for constructing variable-width cartographic lines. Specifically, an algorithm is developed for generating symbolized lines using multiply-stoked centerline data. Algorithmic development considers three factors: cartographic principles, inherent problems with existing algorithms, and hardware constraints imposed by specific output devices including the Defense Mapping Agency's Laser Platemaker. Software developed from the algorithm uses simple trigonometric functions and may be implemented in applications using vector data with vector or raster plotters. (Author)

82.044

Erpenbach, Charles A.; **The Development of Small Scale Map Control via Digital Paneling of Large Scale Map Source**, (Defense Mapping Agency Aeropsace Center) 1982.

Abstract: A digital method has been devised which circumvents the traditional photomechanical reduction of large scale map source and the subsequent manual paneling of those reductions to a smaller scale control projection. The method requires the automatic digitization (via a scanner) of overlays which depict selected features compiled from the large scale source. The scanned data is vectorized. At a digital edit station, the data is then mathmatically transformed to the desired compilation projection using common control points. Through file merging, the data sets are collected and input to a high-speed plotter where planimetric and hypsographic control bases are plotted for chart compilation. (Author)

82.045

Alderman, Philip K.; **Experiences with Digital Terrain Elevation Data Contouring Programs,** (Defense Mapping Agency Aerospace Center) 1982.

Abstract: The DMA digital terrain elevation data base has been expanding steadily since its inception. With increasing coverage there has been a greater opportunity to apply this data, including the automatic derivation of contours from digital elevation data for aerospace charts.

82.046

Roberts, P.A.; Royal Aircraft Establishment. **The Use of Terrain Height Information for Improving the Accuracy of Classification of Landsat Data,** (Defence Research Information Centre) 1982.

Abstract: One potentially important area of work in remote sensing is the use of topographic data in conjunction with satellite imagery to improve the accuracy of classification algorithms. This Memorandum is concerned with techniques for using terrain height data in conjunction with Landsat imagery. An algorithm is described that transforms digitised height contours into an equispaced grid of points. A method is also described which utilises this height matrix to derive the magnitude and direction of the slope of the terrain, information which can in turn be used to calculate the variation in direct solar illumination over an area. Finally, techniques are described for using terrain data to improve the accuracy of multispectral classification of Landsat data. (Author)

82.047

Nosseir, M. K.; **Construction of a Dynamic Model of Land Use-Land Cover from Sequential Remote Sensing Data,** (at: International Symposium on Remote Sensing of Environment (16th) at Buenos Aires, Argentina) (Superintendencia de Recursos Naturais e Meio Ambiente) 1982 pp.629-636.

Abstract: The present paper, demonstrates a methodology for constructing a dynamic model of Land use/Land cover from sequential aerial photographs, over a period of 1938-1976, in the south eastern region of the state of Ohio, USA. The USGS Land use/Land cover legend was adapted to identify the classes, starting from the one suffering highly rejection mechanism (Water) to that of climax (Mixed mesophytic forest). A discretization procedure was applied to divide the site into 56 equal size cells (1 km by 1 km). Photogrammetry techniques were applied to transfer the ground coordinates of the cell corners (nodes) into photo coordinates. The central projective equations were the main tools in this transformation. Photo coordinates were plotted on the most recent aerial photographs (1976). Zoom transfer-scope was used in transformation of aerial photographs. Land use/Land cover classes were mapped for each cell for each set of photographs. Acreage was computed at a one hectare resolution. Cluster analysis was used to group cells of similar Land use/Land cover composition of the 1976 aerial photographs. Cells each cluster were tracted through time to determine the pathway through which they passed and to determine their initial stage in 1938. A proposed Land use/Land cover model was constructed indicating the pathways and the most responsible mechanisms.

82.048

Dominquez, O.; Carballo, S.; **Remote Sensing Analysis of Flooding and Salinity Problems in the NW Area of Buenos Aires Province, Argentina,** (at: International Symposium on Remote Sensing of Environment (16th) at Buenos Aires, Argentina) (Instituto Nacional de Tecnologia) 1982 pp.355-364.

Abstract: Many countries suffer great inundations that generally and periodically overwhelm regions of great productivity. Governments are trying to study these inundations to become familiar with the origin, surface, velocity, depth, and the time of permanence of the waters. They are also trying to estimate damage, in order to program short and long term measures, to prevent or at least mitigate damage. In this paper it is shown how, with minimum cost, time, and personnel, it was possible to comprehend, map, and measure five inundations that caused great damage to a region of approximately 65 000 sq km of the Argentine Republic. Color composite diapositives (scale 1:1.000.000) and paper enlargements (scale 1:200.000) of bands 5 and 7 were used. The interpretation was realized by two professional, in four months of effective work, using a manual technique. Ten maps covering an area of 70.000 sq km were elaborated showing the different percentages of land and flood water. Two maps showing areas with different risk of flooding and maps showing outcropping salinity were made.

82.049

Environmental Research Inst. of Michigan. **Papers Selected for Presentation at the International Symposium on Remote Sensing of Environment (16th) Held at Buenos Aires, Argentina on 2-9 June 1982**, (at: International Symposium on Remote Sensing of Environment (16th) at Buenos Aires, Argentina) (Environmental Research Inst. of Michigan) 1982.

Abstract: Partial Contents: Microwave Radiometric Mapping of Oceanographic and Atmosphere Parameters Based on Satellite Monitoring; Study of Sedimentary Flow and Dispersion from the Rio Bermejo Basin through Satellite Information; Mapping of Phytoecological Units of the "Cerrados" of the Central Plateaus of Brazil; The Use of Landsat Imageries for Mapping of Fishponds in the Philippines; Evaluation and Development of Techniques for Crop Inventory in the Wheatbelt of Western Australia Using Satellite Data; Evaluation of Spatial Filtering on the Accuracy of Wheat Area Estimate; Acquisition of Spectral Signatures of Crop Features in the Trenque Launquen Area; Cartographic Digital Enhancement of Remotely Sensed Urban Images; Construction of a Dynamic Model of Land Use/Land Cover from Sequential Remote Sensing Data; and Application of Remote Sensing Techniques in Geological Mapping - A Case Study of a Precambrain Terrain.

82.050

Michigan State University. **Use of Remote Sensing for Land Use Policy Formulation**, (National Aeronautics and Space Administration) 1982.

Abstract: Research projects described include: (1) identifying coniferous forest types in Michigan using LANDSAT imagery; (2) investigating synoptic temperature patterns in Michigan as determined via GOES and HCMM thermal imagery; (3) land surface change detection using satellite data and a geographic data base; (4) determining soil map unit composition by electronic scanning densitometry; and (5) delimiting areas of virus infection in vineyards and blueberry fields in southwestern and western Michigan. Contractual activities involve important farmlands inventory, changes in aquatic vegetation in Saginaw Bay, digitized soil association map of Michigan, and aerial photography for hybrid-poplar research. On-going projects are also being conducted in Jamaica, Honduras, the Dominican Republic and Kenya.

82.051

Nicol, Michael R.; **Improving the Useability of the Defense Mapping Agency Digital Feature Analysis Data for Training Simulator Applications**, (Air Force Institute of Technology) 1982.

Abstract: The Air Force is intensifying its reliance upon flight simulators to provide initial and proficiency training for various aircrew members. The effectiveness of these simulators depends heavily upon the Defense Mapping Agency's digital cartographic data, which is used as source data to generate simulator data bases for visual, radar, and sensor simulations. Unfortunately, the source data occasionally displays certain characteristics which disrupt the highly automated processes used to generate these simulator data bases, or which lead to improper or visually distracting effects in the resulting simulations. This paper describes the development of a software package designed to detect these problems in the source data. The capability is also provided to interactively, or in some cases automatically, correct the problems, thus producing slightly modified data that is free of these disruptive characteristics. This software streamlines the simulator data base generation process and ultimately results in a higher fidelity simulator data base.

82.052

National Aeronautics and Space Administration. **Earth Resources: A Continuing Bibliography with Indexes, Issue 35,** (National Aeronautics and Space Administration) 1982.

Abstract: This bibliography lists 587 reports, articles, and other documents introduced into the NASA Scientific and Technical Information System between July 1, and September 30, 1982. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis.

82.053

Bergis, V.; Maw, K.; Newland, W.; Sinnott, D.; Thornbury, G.; **Gates to Gregg High Voltage Transmission Line Study,** (National Aeronautics and Space Administration).

Abstract: The usefulness of LANDSAT data in the planning of transmission line routes was assessed. LANDSAT digital data and image processing techniques, specifically a multi-date supervised classification approach, were used to develop a land cover map for an agricultural area near Fresno, California. Twenty-six land cover classes were identified, of which twenty classes were agricultural crops. High classification accuracies (greater than 80%) were attained for several classes, including cotton, grain, and vineyards. The primary products generated were 1:24,000, 1:100,000 and 1:250,000 scale maps of the classification and acreage summaries for all land cover classes within four alternate transmission line routes.

82.054

General Accounting Office. **Duplicative Federal Computer-Mapping Programs: A Growing Problem,** (General Accounting Office, Resources Community Economic Division) 1982.

Abstract: In recent years many Federal agencies have begun to use the computer to prepare maps and analyze the information on them. Because the principal Federal civilian mapper, the U.S. Geological Survey, has not had enough funds to keep pace with other Federal agencies' demand for computerized versions of its maps, other Federal agencies have had to develop them on their own. This has resulted in duplicative mapping programs and lost savings opportunities. The problem will get worse as computer mapping expands in the Federal Government. GAO is recommending a number of actions to eliminate further unecessary Federal costs

82.055

Zinkl, R.J.; Shettel, Jr., D.L.; D'Andrea, Jr., R.F.; Bendix Field Engineering Corp., Grand Junction Operations. **PLTSYM: A FORTRAN Computer System to Plot Canadian Symbol Location Maps for Hydrogeochemical and Stream Sediment Reconnaissance Data,** (Dept. of Energy) 1982.

Abstract: The PLTSYM system plots sample location maps on a line plotter at virtually any scale with data point values represented by one of 15 Canadian symbols. Sample location data can be in latitude/longitude or (X,Y) coordinate form. Five map projections are available for converting latitude/longitude into easting/northing coordinates. Data values can be sorted into classes using any one of four different class interval options. (ERA citation 08:001680)

82.056

Franklin, Dennis P.; Holmes, Garry L.; **Overview of Automated Cartography Efforts at DMAAC,** (Defense Mapping Agency Aerospace Center) 1982.

Abstract: The application of computer and computer assisted techniques to support current and future (thru 1988) requirements for chart production at the Defense Mapping Agency Aerospace Center (DMAAC) is discussed. Topics discussed include: Digital Paneling (computer assisted technique for reducing large scale map source to a smaller control projection); computer assisted chart symbolization for chart products, Digital Landmass System (DLMS), a data base containing Digital Terrain Elevation Data (DTED) and Digital Feature Analysis Data (DFAD) to support charting requirements and the computer generation of relief information from DTED data. Control, data collection, editing, chart compilation, chart revision, color separation, symbolization, and printing can be enhanced or accomplished by automated processes. Also considered is the development and continual evaluation of a Digital Cartographic Applications Data Base (DCAD) to provide this Center with a capability to support advanced digital mapping requirements. The DTED and DFAD data currently produced by DMAAC are used to support advanced aircraft simulators and navigation systems requirements.

82.057

National Technical Information Service. **Photogrammetry: Equipment and Image Processing. 1975-December, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base),** (National Technical Information service) 1982.

Abstract: This bibliography contains citations concerning aerial and satellite photogrammetric equipment and image processing methods and technology. Image correlation techniques are considered according to photogrammetric and mathematical fundamentals as well as the techniques for video-conversion, correlation, and rectification of video signals. Data processing system programs for the acquisition, storage, and processing of cartographic data obtained photographically are also considered. (This updated bibliography contains 135 citations, 20 of which are new entries to the previous edition.)

82.058

National Aeronautics and Space Administration. **Earth Resources: A Continuing Bibliography with Indexes,** (National Aeronautics and Space Administration) 1982.

Abstract: This bibliography lists 567 reports, articles, and other documents introduced into the NASA Scientific and Technical Information System between April 1, and June 30, 1982. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis.

82.059

Dejesusparada, N.; Niero, M.; Lombardo, M.A.; Foresti, C.; Instituto de Pesquisas Espaciais, SAO JOSE Dos Campos (Brazil). **The Use of Landsat Data to Monitor the Urban Growth of Sao Paulo Metropolitan Area,** (National Aeronautics and Space Administration) 1982.

Abstract: Urban growth from 1977 to 1979 of the region between Billings and the Guarapiranga reservoir was mapped and the problematic urban areas identified using several LANDSAT products. Visual and automatic interpretation techniques were applied to the data. Computer compatible tapes of LANDSAT multispectral scanner data were analyzed through the maximum likelihood Gaussian algorithm. The feasibility of monitoring fast urban growth by remote sensing techniques for efficient urban planning and control is demonstrated.

82.060

Wilson, C.; Dye, R.; Reed, L.; Environmental Research Inst. of Michigan, Applications Div.. **Cartographic Mapping Study**, (National Aeronautics and Space Administration) 1982.

Abstract: The errors associated with planimetric mapping of the United States using satellite remote sensing techniques are analyzed. Assumptions concerning the state of the art achievable for satellite mapping systems and platforms in the 1995 time frame are made. An analysis of these performance parameters is made using an interactive cartographic satellite computer model, after first validating the model using LANDSAT 1 through 3 performance parameters. An investigation of current large scale (1:24,000) US National mapping techniques is made. Using the results of this investigation, and current national mapping accuracy standards, the 1995 satellite mapping system is evaluated for its ability to meet US mapping standards for planimetric and topographic mapping at scales of 1:24,000 and smaller.

82.061

Nithack, J.; European Space Agency. **Visual Evaluation of Side-Looking Airborne Radar (Slar) Imagery**, (National Aeronautics and Space Administration) 1982.

Abstract: The use of aerial photography data analysis techniques with geoscientific SLAR data, recorded on video tape during aircraft flights, was investigated. Good geomorphological information can be obtained if the variations in the rock and soil are morphologically displayed. Data can be interpreted morphologically even where there are height differences of + or - 200m (in relation to a mean level). The flight paths should run parallel to the principal morphological structures. Land use cartography is difficult because the dynamic range of video registration is too narrow and photographic representation of the data leads to a decisive loss of information. Gray tone and surface texture are ambiguous. Satisfactory grassland charting requires recordings obtained in different seasons.

82.062

Nation, Dolf C.; **Computer-Assisted Map Comparison**, (Air Force Inst. of Tech.) 1982.

Abstract: The concept of map comparison is treated in a general manner for thematic, regularly gridded maps. Three methods of map comparison, direct methods, trend surface, and spatial autocorrelation, are investigated. The direct methods and trend surface method are applied to artificial surfaces and subsequently to regularly gridded maps of the pollutant total suspended particulates. A method of forming spatial or two dimensional autocorrelation maps is presented. A strategy based on these methods, is described whereby a large number of regularly gridded maps can be readily compared. (Author)

82.063

Franklin, Dennis P.; **Charting Utilization Requirements for a Digital Cartographic Data Base**, (Defense Mapping Agency Aerospace Center) 1982.

Abstract: The application of computers and computer processes to support chart production at the Defense Mapping Agency Aerospace Center (DMAAC) is discussed. The chart production process is continually being analyzed for application to automation. Source assessment and inventory, control, data collection, chart compilation and revision, color separation and printing can be enhanced or accomplished by automated processes.

82.064

Messmore, Jeffrey A.; **Terrain Analysis Procedural Guide for Drainage and Water Resources (Report Number 8 in the ETL Series on Guides for Army Terrain Analysts)**, (Army Engineer Topographic Labs.) 1982.

Abstract: This document is one in a series of terrain analysis procedural guides being developed in support of the Topographic Support System (TSS). It was written specifically for the U.S. Army's Terrain Analysts and presents the methodology for extracting, reducing, and recording information for the drainage and water resources data field. This data field is divided into 3 subfields: (1) water-courses and water bodies, (2) drainage basins, and (3) ground water. Step-by-step procedures are provided for producing a factor overlay and supporting data tables for each of the drainage and water resources data fields. (Author)

82.065

Leberl, Franz W.; Ranziger, Hubert; **Registration of Digitized Aerial Photography with a Digital Map Data Base**, (Technische Univ. Inst. for Applied Geodesy and Photogrammetry) 1982.

Abstract: This report investigates the feasibility of automatic registration of a digital aerial image with an existing map data bank. The geometry of an aerial image can be modelled mathematically by a central perspective. The theoretical part presents the background of this model and discusses various strategies to solve the problem of resection in space. We propose a method to automatically recognize areal features of the map in the image and to extract control points for the reconstruction of the imaging configuration. Recognition is done by three algorithms: by correlation, by thresholding and by adaption of a binary mask. Results give estimates for the distance of projected features from actual objects, dislocations caused by variation of the transformation parameters and include experiments performed with an actual aerial photograph. (Author)

82.066

Watson, K.; Geological Survey. **Topographic Slope Correction for Analysis of Thermal Infrared Images**, (National Aeronautics and Space Administration) 1982.

Abstract: A simple topographic slope correction using a linearized thermal model and assuming slopes less than about 20 degrees is presented. The correction can be used to analyzed individual thermal images or composite products such as temperature difference or thermal inertia. Simple curves are provided for latitudes of 30 and 50 degrees. The form is easily adapted for analysis of HCMM images using the DMA digital terrain data.

82.067

Faintich, Marshall B.; **Sensor Image Simulator Application Studies**, (Defense Mapping Agency Aerospace Center) 1982.

Abstract: The primary objective of the digital sensor simulation investigations being conducted at the Defense Mapping Agency (DMA) is to establish an editing and analysis capability for the digital culture and terrain data bases. These data bases are being produced by DMA to support advanced aircraft simulators by providing an improved high, medium, and low level radar training capability offered by the digitally generated radar landmass images. In addition to radar scenes, visual and multi-sensor scenes are being digitally generated. For purposes of quality control and data base applicability investigations, DMA has developed the Sensor Image Simulator (SIS), a very high speed data base edit station and static scene simulator that allow for interactive query and manipulation of individual features in the data base displays and/or simulated sensor scenes to determine the corresponding data base elements responsible for the simulated features.

82.068

National Technical Information Service. **Printers. 1964-March, 1982 (Citations from the NTIS Data Base),** (National Technical Information Service) 1982.

Abstract: The bibliography cites research on computer printers, contact printers, projection printers, and microfilm reader-printers. Studies are included on the use of these printers in computer graphics, aerial photography, cartography, and data processing. (This updated bibliography contains 215 citations, 21 of which are new entries to the previous edition.

82.069

National Technical Information Service. **Computer Aided Mapping. 1976 - April, 1982 (Citations from the NTIS Data Base),** (National Technical Information Service) 1982.

Abstract: Federally-sponsored research on the applications of computer techniques to cartography is included in the cited reports. Automatic mapping, geographic data bases, and computerized photomapping are included. (This updated bibliography contains 292 citations, 60 of which are new entries to the previous edition.)

82.070

National Technical Information Service. **Computer Aided Mapping. 1970 - April, 1982 (Citations from the Engineering Index Data Base),** (National Technical Information Service) 1982.

Abstract: Research reports concerning the applications of computer techniques to cartography are cited from the worldwide journal literature. Automatic mapping, geographic data bases, and computerized photomapping are included. (This updated bibliography contains 231 citations, 33 of which are new entries to the previous edition.)

82.071

Colvocoresses, Alden P.; **Automated Satellite Mapping System (MAPSAT),** (Department of the Interior) 1982.

Abstract: A system for automatically mapping the surface of a celestial body is presented. A satellite in a near polar sun-synchronous orbit about the body includes two or three linear sensing photo-detector arrays mounted transversely to the satellite heading. With two arrays, both are oriented at the same angle to the geometric vertical, with one aimed forward and the other aft along the apparent track of the satellite. With three arrays, the third array is oriented downward toward the geometric vertical. Two of the arrays are used to sense the body surface with the satellite velocity providing continuous imaging. The two arrays produce two data flows which, when correlated, result in data representative of elevational information for each incremental area of each strip. The system allows near real-time mapping since the imaged areas being compared are included in an equipolar plane, making data correlation for topographic information a matter of comparing the two one-dimensional records.

82.072

Swanson, Frederick J.; Janda, Richard J.; Dunne, Thomas; Swanston, Douglas N.; **Sediment Budgets and Routing in Forested Drainage Basins,** (USFS) 1982.

Abstract: Sediment budgets quantify the transport and storage of soil and sediment in such drainage basins. Use of computer models, physical models, and field observations in sediment routing studies are discussed. Ways of determining the relative importance of sediment sources within a basin, biological factors in sediment transport and storage, and recognizing changes of sediment storage within basins when interpreting sediment yield are described.

82.073

Welby, Charles W.; Wilson, Thomas M.; **Use of Geologic and Water Yield Data from Ground Water Based Community Water Systems as a Guide for Ground Water Planning and Management**, (North Carolina State University) 1982.

Abstract: Special Report: Wake County, NC., was the site of a study to provide guidelines for evaluating ground water use as an element in land-use planning. The data base was 214 wells constructed to supply water to various subdivisions and mobile home parks in the area. From a land-use planning viewpoint the study suggests that development needing a water usage exceeding that required by a single-family residential density of one unit/acre should be concentrated in those areas where governmental planning proposes extension of water and sewer services.

82.074

Morgan, Ken M.; Nalepa, Randolph; **Application of Aerial Photographic and Computer Analysis to the USLE for Areawide Erosion Studies**, (in: Journal of Soil & Water Conservation, Vol.37, no.6) (Texas Christian University) 1982, Nov-Dec.

Abstract: Technical Feature: Problem Erosion areas in the Quil Miller Creek watershed in Texas were identified by photointerpretation of color infrared aerial photographs and a universal soil loss equation (USLE) and computerized land information system. Results from both ground data and photointerpretation were used to determine the accuracy of the erosion analysis performed. The field study indicated that average soil loss in the study area was 6 metric tons/HA/YR. The figure agreed closely with the 5.6 metric TPY/HA obtained using photointerpretation techniques. Remote sensing and computer analysis required 50% fewer work hours than was needed for ground data collection.

82.075

Briggs, David; **The Ecological Mapping of the European Community**, (in: Ekistics, Vol.49, no.294) (University of Sheffield) 1982, May-June.

Abstract: Survey Report: The aims of ecological mapping are outlined; they include: providing a framework for the collection and presentation of environmental data, and facilitating the consideration of environmental factors in spectoral policies of the European community. The main principles of ecological mapping are presented, and the method is proposed. Major areas of concern - land, landscape and nature, water, air, natural hazards, and monitoring environmental changes - are detailed.

82.076

McLaughlin, John; Masry, Salem E.; **Multipurpose Land Information Systems: A Canadian Perspective**, (in: Journal of Surveying & Mapping Div-ASCE, Vol.108, no.1) (University of New Brunswick) 1982, April.

Abstract: Technical Report: The evolution of computerized land informations systems and other information technologies is described. The need for such systems arose from state involvement in land management processes. The impact of such information technology on surveying professions in Canada is analyzed.

82.077

Junkin, B.G.; NASA. NATL Space Technol Labs, Earth Resources. **Development of 3-Dimensional Spatial Displays using a Geographically based information-system (En)**, (in: Photogrammetric Engineering and Remote Sensing, Vol.48, no.4) 1982 pp.577-586.

82.078

McLaughlin, John; Masry, Salem E.; **Multipurpose Land Information-Systems - A Canadian Perspective (En)**, (in: Journal of the Surveying and Mapping Division - ASCE, Vol.108, no.1) (Univ. New Brunswick, Dept. Surveying Engineering) 1982 pp.1-9.

82.079

Mirante, Anthony; Weingarten, Nicholas; **Radial Sweep Algorithm for Constructing Triangulated Irregular Networks**, (in: IEEE Comput Graphics Appl., Vol.2, no.3) (Skidmore, Owings & Merrill) 1982, May pp.11-13, 15-21.

Abstract: The triangulated irregular network (TIN), where three-dimensional coordinates are linked into nonoverlapping triangles of irregular size is presented as one of the methods of modeling irregular surfaces, a primary form of representation of digital terrain maps. Triangulated networks are created by linking triplets of nodes and maintaining pointers from each triangle to its three neighbors. Such networks can be used to describe almost any surface, including those with holes, irregular boundaries, or vertical surfaces. Contour cutting and mathematical operations such as cut-and-fill calculations are easily performed. Problems, solutions and examples of TIN applications are outlined. 4 refs.

82.080

ten Hagen, Paul J.W.; **Graphics Standardization - Activities of ISO/TC97/SC5/WG2 and their impact in Europe.**, (in: Comput Graphics (ACM), Vol.16, no.3) (Math Cent.) 1982 pp.45-46.

Abstract: In 1980, it was reported at a SIGGRAPH session that the Graphics Working Group of ISO (ISO/TC97/SC5/WG2) had decided to define a 2D core-like standard based on the DIN GKS proposal. At the same session, a new concept was introduced called a workstation, which was to be a basis for achieving device independence in GKS. In the two years of reviewing which has since taken place, the workstation concept has been further developed and as a result has become much more important than it was, say, in the 1979 version of GKS. The workstation supports a two stage abstraction mechanism for input and output primitives, especially with respect to their attributes (including transformations). In this way, every aspect which can be dealt with in a similar manner for each device (e.g. purely geometric information) is moved up to the higher abstraction level and called workstation independent. Following this two level abstraction, a two level mapping is defined in GKS, leading to two classes of functions: those addressing all active workstations at the same time (w. s. independent) and those addressing a particular work station (identified by a parameter).

82.081

Clark, James H.; **Geometry Engine: A VLSI Geometry System for Graphics.**, (in: Comput Graphics (ACM), Vol.16, no.3) (Stanford Univ.) 1982, July pp.127-133.

Abstract: The Geometry Engine is a special-purpose VLSI processor for computer graphics. It is a four-component vector, floating-point processor for accomplishing three basic operations in computer graphics: matrix transformations, clipping and mapping to output device coordinates. A description is given of the Geometry Engine and the Geometric Graphics System it composes. It presents the instruction set of system, its design motivations and the Geometry System architecture. 4 refs.

82.082

Borufka, H.G.; Kuhlmann, Herbert W.; ten Hagen, Paul J.W.; **Dialogue Cells: A Method for Defining Interactions.,** (in: IEEE Comput Graphics Appl., Vol.2, no.5) (Tech. Univ.) 1982, July pp.25-27, 29-30, 32-33.

Abstract: Methods of input and output - the two components of man-machine dialogue - are considered in addition to other requirements of algorithmic solutions in data exchange in interactive systems. The quality of such systems depends on the quality of this dialogue. Methods developed to support the design of good user interfaces and dialogues are dealt with. It is shown how they can be effected with a design concept called dialogue cells. Four basic elements, the components of a dialogue cell, are introduced and the direction of their influence on each other determined. The hierarchical organization is defined, to allow for uniform treatment of Graphical Kernel System (GKS) input functions and dialogue cells. The graphical elements of output and input are easily mapped onto the Graphical Kernel System to provide flexibility and device independence. 5 refs.

82.083

Leberl, Franz W.; Olson, Dale E.; **Raster Scanning for Operational Digitizing of Graphical Data.,** (in: Photogrammetric Engineering & Remote Sensing, Vol.48, no.4) (Tech University & Graz Research Centre) 1982 pp.615-627.

Abstract: The current growth of computer graphics has resulted in operational automated systems to digitize existing maps and drawings. The configuration and performance of SysScan, a general purpose hard- and software configuration for converting maps and drawings into a digital format, and to edit, store, retrieve, and generally manipulate the digital data are described. A unique component of SysScan is KartoScan, a raster scanner using white light and a CCD array sensor. In the commercial mapping segment, this system has pioneered the operational applications of raster scanning to a number of digitizing tasks, among them the generation of digital elevation models from contour lines, and the creation of digital polygon data sets. Experience in these applications are reported. 9 refs.

82.084

Hasan, Syed E.; West, Terry R.; **Development of an Environmental Geology Data Base for Land Use Planning.,** (in: Bull Assoc. Eng. Geol., Vol.19, no.2) (University of Missouri) 1982, May pp.117-132.

Abstract: A study involving a computerized data base for land use planning at the county level required early decisions in the selection of physical characteristics that best describe the land relative to planning and the size of the data cell for encoding and storing this information. These aspects of the complete study, which are necessary features for all computer-based land use plans, are explored. 15 refs.

82.085

Perucchio, Renato; Ingraffea, Anthony R.; Abel, John F.; **Interactive Computer Graphic Preprocessing for Three-Dimensional Finite Element Analysis,** (in: Int J Numer Methods Eng, Vol.18, no.6) (Cornell University) 1982, June pp.909-926.

Abstract: An interactive computer graphic system has been developed for generating and editing three-dimensional finite element meshes. The various difficulties inherent to the generation of solid three-dimensional geometries through an effective use of computer graphic techniques are examined to explain the advantages of this system. The method is a combination of discrete transfinite mapping and cubic spline blending algorithms, used, respectively, to create plane cross-sectional meshes, and to generate the three-dimensional geometry by interpolaring between the cross-sections. The flexibility and usefulness of the systems are illustrated with the help of three examples of practical interest. 24 refs.

82.086

Smith, P.; **Computer Graphics in Road Planning and Design,** (in: CSIRONET News (Australia), no.168) (National Capital Dev. Comm.) 1982, December pp.11-12.

Abstract: Describes a roadworks package which is part of a fully integrated road planning and design program package which allows suitability mapping, thematic mapping, subdivision calculations and three-dimensional models, all of which work from the same digital terrain model and/or thematic map grid. The output, including animations, allows the design to be fully evaluated before a cent has been spent on the construction. It has been very effective in presenting the ideas of engineers, planners and landscapers to those who make the final decision on whether the project goes ahead.

82.087

Heckbert, P.; **Color Image Quantization for Frame Buffer Display,** (in: Comput. Graphics (USA), Vol.16, no.3) (at: 9th Annual Conf. on Computer Graphics & Interactive Techniques at Boston, MA) (ACM) 1982, July pp.297-307.

Abstract: Algorithms for adaptive, tapered quantization of color images are described. The research is motivated by the desire to display high-quality reproductions of color images with small frame buffers. It is demonstrated that many color images which would normally require a frame buffer having 15 bits per pixel can be quantized to 8 or fewer bits per pixel with little subjective degradation. In most cases, the resulting images look significantly better than those made with uniform quantization. The color image quantization task is broken into four phases: (1) sampling the original image for color statistics. (2) choosing a colormap based on the color statistics. (3) mapping original colors to their nearest neighbors in the colormap. (4) quantizing and redrawing the neighbors in the colormap. (4) quantizing and redrawing the original image (with optional dither). Several algorithms for each of phases 204 are described, and images created by each are given.

82.088

Kurilov, M.A.; Manako, V.V.; Nikitin, A.Z.; Chichkan, I.V.; **GRAS Standard Graphics Software. Means of Mapping Storage and Transfer of Graphical Data,** (in: Avtometriya (USSR), Vol.4,) 1982, July-August pp.23-28.

Abstract: The GRAS Graphics Software is an advance towards a machine-independent package, insofar as transfer from one machine to another does not require knowledge of the software structure. At the same time the user can operate any graphics system based on GRAS software. Since its functions are standardised, GRAS has a two-level structure; at the basic level primitive two and three dimensional outputs and their attributes and time segments are available: at the higher level whole graphical elements and functions are available and can be manipulated. The storage and output of graphical data from GRAS is organized as a hierarchy of graphical protocols whose commands correspond closely to the commands of the hardware drivers. Data transfer is in the form of standard machine-independent pseudo-display files.

82.089

Dobson, M.W.; **Some Problems Associated with the use of Color in Cartographic Displays,** (at: Graphics Interface '82) (Canadian Man-Comput. Commun. Soc., Nat. Comput.) 1982 pp.255-259.

Abstract: Cartography, having been spurred on by the relatively recent advances in raster technology, has made a headlong plunge into the world of color graphics. Although cartographers have been involved in color production for centuries, this recent digital innovation allows color to be used freely in an environment that lacks the restrictions generated by the time and expense of manual color preparation, color proofing and color printing. Unfortunately, the advances in technology have surpassed the available theory relating to the effective utilization of color in cartographic displays. In an attempt to provide some insights towards a utilitarian approach to color mapping, several models are described that illustrate the human factors considerations in the communication of cartographic messages. From these models, notions of an effective color theory are developed and illustrated by examples of color choropleth maps produced with the Decision Information Display System (DIDS).

82.090

Moon, George C.; Lehan, Tim J.; Collins and Moon Ltd.. **Microcomputer Based Spatial Information System,** (at: Graphics Interface '82) (Canadian Man-Comput. Commun. Soc.) 1982 pp.251-254.

Abstract: Spatial information systems consist of not only graphical capabilities, but also data analysis capability. Most systems dealing with spatial information concentrate on producing good quality hard copy output. In many instances, the hard copy is secondary to information content of the data. The hardware cost of providing high quality or cartographic quality for mapping purposes, graphics is high, thereby limiting the number of potential users of spatial information systems. This paper describes the efforts of providing a low cost, microcomputer based spatial information system.

82.091

Pavlidis, Theo; Cherry, L.L.; Bell Laboratories. **Vector and Arc Encoding of Graphics and Text,** (at: 6th International Conf. on Pattern Recognition) (IEEE) 1982 pp.610-613.

Abstract: In digitized text, diagrams, maps, and engineering drawings, most of the information is contained in a small fraction of the pixels. The paper describes a method for encoding such images as vectors and arcs. The transformation is accomplished by: (I) thinning the binary image into one where each dark pixel has few neighbours, (II) mapping the thinned image into a graph that has no nodes of degree two, (III) fitting strings of dark pixels with exactly two neighbors by straight line segments and circular arcs, and presenting junctions of such elements in the graph as nodes of degree two, (IV) reordering and merging branches, eliminating noise, and identifying major features, such as loops, (V) recognizing graphs that represent symbols.

82.092

High-Performance Plotter Exhibits Many Interesting Features, (in: Automation (GB), Vol.18, no.8-9) 1982, Aug-Sept. pp.18-19.

Abstract: Describes newly introduced HP 7585A E/AO-size draughting plotter. It is expected to enhance Hewlett-Packard's position as a leading supplier of computer-graphics plotters for CAD/CAM, mapping, draughting, data plotting and business markets, designed around the micro-grip drive technology introduced in January 1981, on HP's D/A1-size plotter. The new HP 7585A features microprocessor control, high resolution, excellent repeatability, 4G acceleration and speeds up to 60 cm/sec. The HP 7585A's pen-handling capabilities, believed to be unique, include: automatic setting of pen force and writing speed to accommodate different plotting media and pen types; automatic capping of pens not in use to prevent ink dryout; and programmed selection of up to eight different pens for combinations of colour, line width and pen type on a single plot.

82.093

Freeman, Herbert; Frauenknecht, P.J.; Rensselaer Polytechnic Institute. Computer Research Laboratory, Troy, N.Y.. **An Efficient Computer Representation Scheme for Linear Map Data,** (at: PRIP '82. IEEE Computer Society Conference on Pattern Recognition and Image Processing) (IEEE) 1982 pp.315-320.

Abstract: The computer processing of map data requires that the data be in digital form; that is, that the data be both quantized and encoded. A new scheme for linear map data representation is described and evaluated against a set of performance criteria, with particular emphasis on compactness of representation. The new scheme, called the generalized chain difference code, is shown to lead to impressive savings in storage requirements without sacrificing other desirable features of computer map data representation. Test results obtained by evaluating the scheme against a large-scale contour map are presented.

82.094

Malcolm, C.; **IOSL Graphics for the NASCOM,** (in: Pract. Comput., Vol.5, no.2) 1982, February pp.65-66.

Abstract: The IOSL graphics board offers high resolution bit-mapped graphics. Each bit in a certain block of memory is mapped to a particular point on the screen. The board offers 384 horizontal points by 224 vertical points and can mix ordinary text and bit-map graphics.

82.095

Guptill, Stephen C.; UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. **The Role of Digital Cartographic Data in the Geosciences,** (in: Comput. and Geosci., Vol.9, no.1) (at: First Annual Conference on The Management, Analysis, and Display of Geoscience Data at Golden CO, USA) (Math. Geol. United States) 1982 pp.23-26.

Abstract: The increasing demand of the nation's natural resource developers for the manipulation, analysis, and display of large quantities of earth-science data has necessitated the use of computers and the building of geoscience information systems. These systems require, in digital form, the spatial data on map products. The basic cartographic data shown on quadrangle maps provide a foundation for the addition of geological and geophysical data. If geoscience information systems are to realize their full potential, large amounts of digital cartographic base data must be available. A major goal of the US geological survey is to create, maintain, manage, and distribute a national cartographic and geographic digital database. This unified database will contain numerous categories (hydrography, hypsography, land use etc.) that, through the use of standardized data-element definitins and formats, can be used easily and flexibly to prepare cartographic products and perform geoscience analysis.

82.096

Hidlebaugh, Allen R.; **The Soil Conservation Service's Interest in Geographic Information Systems,** (in: Comput. Environ, and Urban Syst. (GB), Vol.7, no.4) (Soil Conservation Service, US Dept. of Agriculture) 1982 pp.295-300.

Abstract: The Soil Conservation Service (SCS) has used two computer mapping and analysis systems in in-house projects: one polygon, one grid. Both have shown strengths and weaknesses. Cooperative efforts with other organizations have also been useful in defining the characteristics of the more efficient system which SCS hopes to develop. The author describes AMS and MIDAS II.

82.097

Barros, O.; Weintraub, A.; **Planning for a Vertically Integrated Forest Industry,** (in: Oper. Res. (USA), Vol.30, no.6) (Univ. of Chile) 1982 pp.1168-1182.

Abstract: A linear programming model and an information system designed for tactical planning in a vertically integrated forest industry is presented. The industry jointly manages forest lands, a pulp plant and a sawmill. The model considers technological, geographical, silvicultural and economic aspects of planning and gives guidelines for management of timber lands, the supply of timber to plant and mill, and the buying and selling of timber. An information system, with a matrix generator and a report writer, was developed to facilitate handling of input and output by users. Implementation of the model and empirical results are reported.

82.098

Henn, J.W.; Pictor, D.H.; Webb, A.; **Land Clutter Study: Low Grazing Angles (Backscattering)**, (at: International Conference RADAR-82) (IEE) 1982 pp.380-384.

Abstract: One of the important parameters used in clutter modelling is the radar cross-section. Often used to describe clutter returns is the normalised cross-section per unit area, sigma/sub 0/. The use of sigma/sub 0/ tacitly implies that the returns received are caused by a large number of scattering mechanisms distributed uniformly throughout the physical area illuminated by the radar. Ground terrain is by no means uniform. Undulations in the terrain, trees and buildings lead to shadowing effects. Buildings and other man-made effects act as discrete sources. The effects of non-uniformities become more pronounced as the grazing angle is decreased and the cell to cell variation in the observed radar cross-section increases. In spite of these problems sigma/sub 0/ is widely used and the results presented here concentrate on this parameter. The authors also summarise surveyed results (both theoretical and empirical) and discuss a promising way to model ground clutter using a digital data base.

82.099

Higgins, M.; **Forest Analysis Yields Graphic Results**, (in: Data Manage, Vol.20, no.10) 1982, October pp.34-35.

Abstract: In 1979, all of the national forests throughout the US were directed to produce formal forest management plans under the guidelines laid down by the National Forest Management Act. Shasta-Trinity National Forest in California looked for a company offering a geographic information system with the ability to combine various resources. They needed to be able to weigh timber harvesting against wildlife protection, while keeping in mind recreational and other uses of the land. Then linear programming techniques would be employed to optimise and schedule the timber harvesting.

82.100

Tuori, M.; DCIEM. **Spatial Information Management - A Survey**, (at: Graphics Interface '82) (Canadian Man-Comput. Commun. Soc.) 1982 pp.17-21 243-250.

Abstract: Presents a survey of research in spatial information management. Research is reviewed from a variety of application areas, including geographic systems, computer aided design and manufacturing, image processing, graphical interfaces to data base management systems, and general techniques for the representation of spatial information. Significant issues are outlined, and areas suggested for further research.

82.101

Bayer, F.; **Computing in the City of Milwaukee: The Data-Based Geographical Information System**, (in: Comput. Environ. and Urban Syst. (GB), Vol.7, no.1-2) (Data Processing Dept., City of Milwaukee) 1982 pp.83-88.

Abstract: Representing pertinent data geographically has been a persistent problem in the urban planning function of cities. The city of Milwaukee sought a resolution to the problem with a three-level approach. First the various computerized city data bases were assigned geographic identifiers which permitted linking data on a common basis between disparate, but interacting city departments. Second, data bases also were made user-friendly by the creation of simple on-line retrieval capabilities. Finally, data which usually had been provided in tabulation form was transformed automatically into maps and graphs with the purchase of a computer with mapping functions. Together these improvements have produced a system which has met with considerable success.

82.102

Dutton, W.H.; **Eighty Thousand Information Systems: The Utilization of Computing in American Local Governments**, (in: Comput. Environ. and Urban Syst. (GB), Vol.7, no.1-2) (Annenberg School of Communications, Univ. of Southern California) 1982 pp.21-33.

Abstract: Computer use in American local governments is as varied as the governments that employ it. Nevertheless, important similarities exist across local governments. Seven distinct characteristics of American local governments seem to account for these similarities in computer use, explaining for example its limited use and fragmented quality-both within local governments as well as between them. These characteristics include the poverty, autonomy, geographical dispersion, structural fragmentataion, limited role, pluralism and split political culture of American local governments as compared with other organizations both here and abroad.

82.103

Emery, Henry A.; **Community Geographic Data Base,** (in: ASCE J Surv. Mapp. Div., Vol.108, no.SU2) (Kellogg Corp.) 1982, August pp.69-79.

Abstract: The need for a community geographic and utility management system is reviewed. Information needs are identified, as are potential user groups such as local government agencies, utility companies, and engineering and surveying companies. The uses of such a management system are also considered. Potential methods to accomplish a community geographic and utility management information system are also analyzed. The results of several projects in both the public and private sectors are presented.

82.104

Johnson, S.C.; **Interactive Videographic Communication,** (at: Computer Graphics '82 Online Conference) (Online Conferences) 1982 pp.23-31.

Abstract: Development of the laser optical video disc and other advanced technologies has created a new dimension in videographic communication. The advent of low cost microcomputers, special effects graphics systems, voice recognition/synthesis, and touch sensitive devices permits integration of innovative technology mixes that unleashes the creativity of system designers. Intelligent video disc systems have evolved in the areas of mapping, image processing, surrogate travel, training, simulation, and information archival and retrieval. Applications will continue to flourish as the capabilties of new technologies are magnified and the costs diminish.

82.105

DeVries, M.; Westin, F.; Redondo, F.; Gargantini, C.; Marlenko, N.; **Use of a GIS to Combine Land Use Information Derived from LANDSAT with Soils Data to Stratify an Area in Argentina for Crop Forecasting,** (at: 16th Intern. Symposium on Remote Sensing of Environment at Buenos Aires, Argentina) (South Dakota State University) 1982 pp.381-391.

Abstract: Area frame sampling is currently used extensively for providing agricultural crop production data. One of the requirements for the implementation of a successful area frame is the initial stratification of the country or region into relatively homogeneous areas. Soils and land use information play an important role in identifying these homogeneous areas. A technique which utilizes the Area Resource Analysis System (AREAS) geographic information system for processing the soils and land use information in order to obtain output products which are useful for homogeneous area delineations is demonstrated. The area chosen for the study includes portions of the Argentine provinces of LaPampa and Buenos Aires. Political boundary (partido) information was also processed by AREAS in order to provide areal tabulations on a partido basis.

82.106

Spanner, M. A.; Strahler, Alan H.; Estes, J.; **Soil Loss Prediction in a Geographic Information System Format,** (at: 16th Intern. Symposium on Remote Sensing of Environment at Buenos Aires, Argentina) (National Aeronautics and Space Administration) 1982.

Abstract: Soil loss due to erosion from rainfall was accurately predicted for the Santa Paula 7.5 minute quadrangle, Ventura County, California, utilizing the VICAR/IBIS image processing and geographic information system to simulate the Universal Soil Loss Equation (USLE). This work was part of a NASA funded research project investigating methods of incorporating collateral information in Landsat classification and modelling procedures (NSG-2377), performed at the University of California, Santa Barbara. Representing the rainfall, soil erodability, length of slope, slope gradient, crop management and soil loss tolerance coefficients of the USLE were data planes generated from digital Landsat data, USGS Digital Elevation Model topographic data, a digitized NOAA isopluvial map and digitized USDA soil conservation service soil maps. The Pearson product moment correlation coefficient, R, of soil loss predicted from the developed geobased model to a sample of manually derived soil losses was .91 after a log transform, a significant to the .0001 level. Estimates of accuracy for the intermediate data planes representing the rainfall, soil erodability, length of slope, slope gradient, crop management and soil loss tolerance ranged from a correlation coefficient, R, of .81 for the length of slope to 100 percent for the rainfall coefficient. The soil loss information system accurately targeted soil loss problem areas for subsequent analysis by Soil Conservation Service Personnel.

82.107

Jarosz, Christopher J.; Rogers, Steven P.; Anacapa Sciences, Inc.. **Evaluation of Map Symbols for a Computer Generated Topographic Display: Transfer of Training, Symbol Confusion, and Association Value Studies,** (Army Avionics Research & Development Activity) 1982.

Abstract: This report describes three studies conducted to evaluate the effectiveness of map symbols for a computer-generated topographic display. The criteria for developing symbol effectiveness were transfer of training, potential confusion, and association value. A computer-generated topographic display, or CGTD, utilizes a cathode ray tube (CRT), or other electronic display, to present map-like information. Conventional map symbols often are inapplicable with a CGTD because the matrix display elements, or 'pixels' does not provide sufficient resolution for portraying small and detailed shapes. As a part of the research described in this report, design guidelines were developed for creating symbols that meet the limitations of a pixel matrix display. Sixty-nine topographic and tactical symbols were developed for the candidate symbol set. The evaluation of symbol effectiveness was conducted by means of three surveys completed by military personnel.

82.108

Eskeland, L.; **GRIDGEN User's Manual,** (Institutt for Energiteknikk) 1982.

Abstract: GRIDGEN is an interactive graphical system generating initial values in a block model of an oil reservoir by manipulating regularly gridded map representation. This report is the User Manual, which defines concepts, describes commands and usage.

82.109

Stoner, E.R.; **Agricultural Land Cover Mapping in the Context of a Geographically Referenced Digital Information System,** (National Aeronautics and Space Administration) 1982.

Abstract: The introduction of soil map information to the land cover mapping process can improve discrimination of land cover types and reduce confusion among crop types that may be caused by soil-specific management practices and background reflectance characteristics. Multiple dates of LANDSAT MSS digital were analyzed for three study areas in northern Missouri to produce cover types for major agricultural land cover classes. Digital data bases were then developed by adding ancillary data such as digitized soil and transportation network information to the LANDSAT-derived cover type map. Procedures were developed to manipulate the data base parameters to extract information applicable to user requirements. An agricultural information system combining such data can be used to determine the productive capacity of land to grow crops, fertilizer needs, chemical weed control rates, irrigation suitability, and trafficability of soil for planting.

82.110

Eklundh, J.O.; Jungert, E.; Foersvarets Forskningsanstalt. **Approach to a Pictorial Information Management System,** (National Aeronautics and Space Administration) 1982.

Abstract: The development of an information system containing map and image data is reported. Two issues are given particular stress. The first one concerns the input of map data in interpreted form into the computer. This goal is achieved by application of image processing techniques to the photographic (binary) overlays used in the map making. The second issue deals with the design of an object oriented information system, the objects being geographic entities with attributes. This system is built up as a Lisp-system on top of a relational database system. The present status of the project is reported together with an outline of future work.

82.111

Merrill, D.W.; **Problems in Spatial Data Analysis,** (at: SAS Users Group International Meeting at San Francisco CA) (California University) 1982.

Abstract: In SEEDIS, the Socio-Economic Environmental Demographic Information System at Lawrence Berkeley Laboratory (LBL) some 70 geographic levels (e.g., 1970 or 1980 counties) are defined, corresponding to archived data files. If efficiency considerations are ignored, each file needs to be stored only at the most detailed level for which the data are complete. Geocode correspondence files provide the information required to transform data from any level to any other level. Inevitable, disaggregation requires ad hoc proportionality assumptions: different assumptions are suitable for different applications. In SEEDIS, unlike other systems, these assumptions are under the user's control. The SEEDIS geocode conversion files and proxy variable files can be used to aggregate and disaggregate arbitrary data files, either within or outside SEEDIS. Other files now being developed describe other dimensions of the data, for example, industrial or occupational classification. (ERA citation 08:019394).

82.112

Huning, J.R.; Logan, T.L.; Smith, J.H.; Jet Propulsion Laboratory, Pasadena, CA.. **Cloud-Cover Estimation: Use of GOES Imagery in Development of Cloud-Cover Data Base for Insolation Assessment,** (Department of Energy) 1982.

Abstract: It is the purpose of this study to verify the potential of using digital satellite data to establish a cloud cover data base for the United States, one that would provide detailed information on the temporal and spatial variability of cloud development. The study involves the use of four sequential days of GOES data (eighty acquisitions) over a predetermined test area, and converts those data into a computer achieve of cloud cover, one that is accessible using predetermined grid cells of variable size. Key elements include: (1) interfacing GOES data from the University of Wisconsin Meteorological Data Facility with the Jet Propulsion Laboratory's VICAR image processing system and IBIS geographic information system; (2) creation of a registered multitemporal GOES data base; (3) development of a simply nomralization model to compensate for sun angle; (4) creation of a variable size georeference grid that provides detailed cloud information in selected areas and summarized information in other areas; and (5) development of a cloud/shadow model which details the percentage of such grid cloud or shadow opacity. In addition, comparison of model calculations of insolation with measured values at selected test sites was accomplished, as well as development of preliminary requirements for a large-scale data base of cloud cover statistics.

82.113

McGavran, L.P.; Wheat, B.M.; Los Alamos Scientific Laboratory, Los Alamos NM. **LAMAP, the Los Alamos National Laboratory Mapping Code**, (at: ISSCO Users' Group Meeting, San Diego CA, USA) (Department of Energy) 1982.

Abstract: An interactive computer mapping code, LAMAP, has been developed for the Los Alamos National Laboratory. LAMAP can produce topographic and/or planimetric maps of any area of the Laboratory's 27,800-acre site to any scale. This paper describes briefly the history of the development of the mapping code, the acquisition of the topographic and planimetric data, and the Los Alamos Integrated Computing Network. It also presents a runthrough of LAMAP, highlighting the use of DISSPLA. Finally, a few uses that have been made of LAMAP and some of the additions that have been requested by its users are discussed.

82.114

North Slope Borough Embarks on Massive Computer Mapping Project Arctic Policy Review, 1982.

82.115

Turner, Brian J.; Pennsylvania State University. **Development of a Data Management Front End for Use With a Landsat Based Information System**, (National Aeronautics and Space Administration) 1982.

Abstract: A user friendly front end was constructed to facilitate access to the LANDSAT mosaic data base supplied by JPL and to process both LANDSAT and ancillary data. Archival and retrieval techniques were developed to efficiently handle this data base and make it compatible with requirements of the Pennsylvania Bureau of Forestry. Procedures are ready for: (1) forming the forest/nonforest mask in ORSER compressed map format using GSFC-supplied classification procedures; (2) registering data from a new scene (defoliated) to the mask (which may involve mosaicing if the area encompasses two LANDSAT scenes; (3) producing a masked new data set using the MASK program; (4) analyzing this data set to produce a map showing degrees of defoliation, output on the Versatec plotter; and (5) producing color composite maps by a diazo-type process.

82.116

Barnard, Stephen T.; **Methods for Interpreting Perspective Images**, (at: Image Understanding: Workshop at Palo Alto, CA) (SRI International) 1982.

Abstract: A fundamental problem in computer vision is how, given an image, to determine the orientation of curves and surfaces in space. The problem is difficult because metric properties, such as orientation and length, are not invariant under projection. Under perspective projection (the correct model for most real images), the transform is nonlinear, and therefore hard to invert. Two methods are presented: one finds the orientation of parallel lines and planes by locating vanishing points and vanishing linears; the other determines the orientation of planes by backprojection of angles.

82.117

Shelberg, Mark C.; Moellering, Harold; **IFAS: A Program to Measure Fractal Dimensions of Curves and Surfaces,** (Defense Mapping Agency Aerospace Center) 1982.

Abstract: The Interactive Fractal Analysis System (IFAS) allows the user to measure fractal dimensions of curves and surfaces. This is accomplished interactively through the use of virtual maps, character commands and responses, a graphic cursor, and an audible bell. With either a curve or surface, the user selects the most appropriate fractal dimension by entering a sampling interval and examining the generated scatterplot, correlation coefficient, and table. On a real-time basis, the user also has the capability of determining the fractal dimension for a portion of a curve or surface, editing features, windowing, and creating a perspective view of a surface. Several examples demonstrate that IFAS is able to closely approximate the fracticality of curves and surfaces.

82.118

Olson, R.J.; **Geoecology Data Base (SAS Format),** (Oak Ridge National Lab) 1982.

Abstract: The Geoecology Data Base represents a unique compilation of computerized environmental data for research and development. The system is designed to provide rapid access to data at appropriate spatial and temporal scales for environmental impact assessment and planning. It is an integrated data base of diverse environmental resource information from extant sources. Data are stored at the county level of resolution for the coterminous United States. The Geoecology Data Base contains selected data on terrain and soils, water resources, forestry, vegetation, agriculture, land use, wildlife, air quality, climate, natural areas, and endangered species. Basic files on human population are also included to complement the environmental files.

82.119

Likens, W.C.; Maw, K.; Sinnott, D.; **LANDSAT Land Cover Analysis Completed for CIRSS/San Bernardino County Project,** (National Aeronautics and Space Administration) 1982.

Abstract: The LANDSAT analysis carried out as part of Ames Research Center's San Bernardino County Project, one of four projects sponsored by NASA as part of the California Integrated Remote Sensing System (CIRSS) effort for generating and utilizing digital geographic data bases, is described. Topics explored include use of data-base modeling with spectral cluster data to impove LANDSAT data classification, and quantitative evaluation of several change techniques. Both 1976 and 1979 LANDSAT data were used in the report.

82.120

Cumella, K.E.; Bilanow, S.; Kulikov, I.B.; General Software Corp.. **The Conical Scanner Evaluation System Design,** (National Aeronautics and Space Administration) 1982.

Abstract: The software design for the conical scanner evaluation system is presented. The purpose of this system is to support the performance analysis of the LANDSAT-D conical scanners, which are infrared horizon detection attitude sensors designed for improved accuracy. The system consists of six functionally independent subsystems and five interface data bases. The system structure and interfaces of each of the subsystems is described and the content, format, and file structure of each of the data bases is specified. For each subsystem, the functional logic, the control parameters, the baseline structure, and each of the subroutines are described. The subroutine descriptions include a procedure definition and the input and output parameters.

82.121

Baker, H. Harlyn; Binford, Thomas O.; **A System for Automated Stereo Mapping,** (at: Image Understanding: Workshop at Palo Alto, CA) (Stanford University Dept. of Computer Science) 1982.

Abstract: The past few years have seen a growing interest in the application of three-dimensional image processing. With the increasing demand for 3-D spatial information for tasks of passive navigation Generrgy 1980, Moravec 1980, automatic surveillance Henderson 1979, aerial cartography Kelly 1977, Panton 1978, and inspection in industrial automation, the importance of effective stereo analysis has been made quite clear. A particular challenge is to provide reliable and accurate depth data for input to object or terrain modelling systems (such as Brooks 1981b). This paper describes an algorithm for such stereo sensing. It uses an edge-based line-by-line stereo correspondence scheme, and appears to be fast, robust, and parallel implementable. The processing consists of extracting edge descriptions for a stereo pair of images, linking these edges to their nearest neighbors to obtain the edge connectivity structure, correlating the edge descriptions on the basis of local edge properties, then cooperatively removing those edge correspondences determined to be in error-those which violate the connectivity structure of the two images. A further correspondence process, using a technique similar to that used for the edges, is applied to the image intensity values over intervals defined by the edge correspondence. The result of the processing is a full image array disparity map of the scene viewed.

82.122

National Technical Information Service. **Watershed Management Modeling,** (National Technical Information Service) 1982.

Abstract: This bibliography contains citations concerning the use of mathematical models and simulation techniques as tools for watershed management. Model studies include precipitation and runoff, salinity or pollutant transport, land use in flood plains and other aspects of water resources for management and planning. Some citations identify the model as a management tool, and others report on baseline results using the model for watershed management. (Contains 90 citations fully indexed and including a title list.)

82.123

Bly, S.; Lawrence Livermore National Lab.. **Sound and Computer Information Presentation,** (California Univ.) 1982.

Abstract: This thesis examines the use of sound to present data. Computer graphics currently offers a vast array of techniques for communicating data to analysts. Graphics is limited, however, by the number of dimensions that can be perceived at one time, by the types of data that lend themselves to visual representation, and by the necessary eye focus on the output. Sound offers an enhancement and an alternative to graphic tools. Multivariate, logarithmic, and time-varying data provide examples for aural representation. For each of these three types of data, the thesis suggests a method of encoding the information into sound and presents various applications. Data values were mapped to sound characteristics such as pitch and volume so that information was presented as sets or sequences of notes. In all cases, the resulting sounds conveyed information in a manner consistent with prior knowledge of the data. Experiments showed that sound does convey information accurately and that sound can enhance graphic presentations. Subjects were tested on their ability to distinguish between two sources of test items. In the first phase of the experiments, subjects discriminated between two 6-dimensional data sets represented in sound. In the second phase of the experiment, 75 subjects were selected and assigned to one of three groups. The first group of 25 heard test items, the second group saw test items, and the third group both heard and saw the test items. The average percentage correct was 64.5% for the sound-only group, 62% for the graphics-only group, and 69% for the sound and graphics group. In the third phase, additional experiments focused on the mapping between data values and sound characteristics and on the training methods.

82.124
National Technical Information Service. **NAVSTAR Global Positioning System,** (National Technical Information Service) 1982.
Abstract: This bibliography contains citations concerning the global system of navigation satellites developed to provide immediate and accurate worldwide three-dimensional positioning by air, land, and sea vehicles equipped with appropriate receiving equipment. Developments and applications of the NAVSTAR system are examined. Although the global positioning system is primarily a military system, civilian utilization and potential are included as well. (This updated bibliography contains 145 citations, 46 of which are new entries to the previous edition.)

82.125
National Technical Information Service. **Interactive Computer Graphics,** (National Technical Information Service) 1982.
Abstract: The bibliography cites abstracts from worldwide literature on computer hardware and computer software implementation of interactive graphics systems. Included are applications in a variety of fields. (This updated bibliography contains 281 citations, all of which are new entries to the previous edition.)

82.126
National Technical Information Service. **Interactive Computer Graphics,** (National Technical Information Service) 1982.
Abstract: The bibliography cites abstracts from worldwide literature on computer hardware and computer software implementation of interactive graphics systems. Included are applications in a variety of fields. (This updated bibliography contains 252 citations, none of which are new entries to the previous edition.)

82.127
Goldberg, M.P.; **Geographic Information Systems at the Goddard Space Flight Centre,** (National Aeronautics and Space Administration) 1982.
Abstract: The basic functions of a Geographic Information System (GIS) and the different ways that a GIS may be implemented are described. It surveys that GIS software packages that are currently in operation at the Goddard Space Flight Center and discusses the types of applications for which they are best suited. Future plans for in-house GIS research and development are outlined.

82.128
Caldwell, Douglas R.; Augustine, Robert F.; Strife, Diane E.; **A Prototype Geographic Names Input Station for the Defense Mapping Agency,** (Army Engineer Topographic Labs) 1982.
Abstract: The collection, maintenance, and distribution of geographic names information at the Defense Mapping Agency is accomplished through the Foreign Place Names File, an index card data base. An attempt to automate the file is currently underway, starting with the development of a prototype Geographic Names Input Station. In the short term, the station will be integrated with the gazetteer production flow and will be used to enter, process, and display Roman script foreign text information. Its more important long-term role, however, will be to serve as a testbed for the development of an all digital Foreign Place Names Information System.

82.129

Council of State Governments. **Pilot Study of the Domestic Information Display System in State and Local Government,** (National Aeronautics & Space Administration) 1982.

Abstract: An interactive computer based system that can retrieve a wide range of data (demographic, environmental, socioeconomic, etc.,) from a large data base and display these data for different geographic units in the form of choropleth maps was developed. The system was designed to display statistical information in a geographic format for national policy makers.

82.130

Franklin, Dennis P.; **Charting Utilization Requirements for a Digital Cartographic Data Base,** (Defense Mapping Agency Aerospace Center) 1982.

Abstract: The application of computers and computer processes to support chart production at the Defense Mapping Agency Aerospace Center (DMAAC) is discussed. The chart production process is continually being analyzed for application to automation. Source assessment and inventory, control, data collection, chart compilation and revision, color separation and printing can be enhanced or accomplished by automated processes.

82.131

National Technical Information Service. **NAVSTAR Global Positioning System,** (National Technical Information Service) 1982.

Abstract: This bibliography contains citations concerning NAVSTAR Global Positioning System technology. Satellite navigational systems, land/sea navigational applications, signal processing, and precision positioning technology are among the topics presented. Receiver system error analysis, sensitivity, hardware, and applications are also discussed. (This updated bibliography contains 88 citations, 19 of which are new entries to the previous edition.)

82.132

Ecological Analysts, Inc.. **Environmental Studies Data-Base Feasibility Project,** (Sigma Data Computing Corp.) 1982.

Abstract: The Environmental Studies Database and Analysis System is a computerized system design for use in the storage, retrieval, and analysis of aquatic environmental data related to electric power plants. This research project investigated the feasibility of integrating existing environmental data from site-specific power plant studies and other related sources into a unified structure. The objective of this research was to develop and evaluate a computerized cost-effective means of comparing biological and nonbiological data from different geographical locations and to support scientific extrapolations of results to new locations. This project has produced a tested pilot scale database system for use in managing and analyzing data for waterbody-specific and multi-site studies. The pilot database consists of power plant and waterbody characteristics, aquatic species inventories, and summary time-series data from a variety of scientific studies. The database design includes descriptive entries on sampling locations, collection methods, and study designs to facilitate stand-alone analysis of the available data. The overall design and partial implementation demonstrates the feasibility of integrating environmental data from different sources and conducting comparative analyses. However, nonuniformity of available data, particularly with regard to frequencies and methods of collection, will impose limitations on mixing of data from different studies. To address these limitations, the pilot database design relies heavily on descriptive entries to provide the user with information concerning the uniqueness of each variable in the database. The database software design also provides users with the functional ability to combine or reconfigure extracted data according to their own assumptions. Development of a full-scale database and analysis system, under the present design scheme, will require additional software development as well as additional testing.

82.133

Bartee, Thomas C.; Buneman, Oscar P.; **C3I Data Base and Networking Analysis,** (Institute for Defense Analyses) 1982.

Abstract: DoD networks support a large number of geographically dispersed data bases maintained under heterogeneous software environments. There is an urgent need to provide uniform and simple user access to these data bases, especially for Command and Control systems. This report studies the problems of implementing a network query language and the design of good user interfaces, especially for structurally complex data bases such as the Electronic Warfare Information System (EWIS). Software standards for future data base development are also discussed, especially the problem of adapting Ada to interface to existing data base systems. Further development of data base interfaces is required, and it is suggested that a test-bed be set up to support a selection of C3I data bases and to support this development. The geographic configurations and survivability requirements of DoD networks leads to overall configuration needs that are different from commercial networks. An analysis shows that distributed switches are preferable to a few large switches for a defense data network. Protocols and frontends are also discussed and a need for immediate action in these areas is established.

82.134

Whitteker, J.H.; Communications Research Centre. **The CRC Topographic Data,** (National Aeronautics and Space Adminstration) 1982.

Abstract: A data base of terrain elevations and surface types primarily for providing input data for radio wave prediction programs is described. The data were derived by hand scaling 1:50000 scale topographic maps. An elevation and a surface code is stored for each point in a square array with 500 m spacing. The data reside on computer disks, and are organized for rapid access. The usual method of obtaining information from the data base is by means of a FORTRAN subroutine that provides elevations and surface codes at 500 m intervals along any specified great circle path within the data base area. The elevations may also be plotted on an ordinary alphanumeric computer terminal.

82.135

Johnston, Gerald Walter; **Image Processing of Digital Cartographic Data,** (at: XII Assembly Pan American Inst. of Geography & History at Santiago, Chile) (Defense Mapping Agency Aerospace Center) 1982.

Abstract: The Cartographer has long been interested in depicting surface features of the earth as a pictorial representation. This representation has normally consisted of pen and ink drawings in an easily referenced format. The ability to assure both quality and accuracy became two of the primary concerns of the Cartographer in the production of maps and charts. This paper details the rapid advancement of Cartography through the introduction of micro and mini-computers in the management and quality accuracy determinations of digital elevation and cultural information. Advantages and disadvantages of the new processing techniques are clearly stated. The algorithms and programming techniques are discussed with emphasis placed on resultant enhancements utilized by the cartographic analyst. The major theme for this paper is the methods used at DMA to review the digital data bases through the use of the Image Manipulation Station. System configuration, components, software development and image utilization are discussed. These comments are directed toward the various images (gray-coded, shaded relief) and the quality assurance verification techniques associated with the image enhancements.

82.136

National Technical Information Service. **Instrumentation and Data processing Used in Earth Resources Technology Satellites (ERTS),** (National Technical Information Service) 1982.

Abstract: Abstracts are cited dealing with new or improved remote sensing techniques. Topic areas cover pattern recognition, spectrum analysis, image enhancement, photointerpretation, multispectral photography, and mapping. (This updated bibliography contains 306 abstracts, 42 of which are new entries to the previous edition.)

82.137

Holtquist, Nancy B.; Idaho Water and Energy Resources Research Inst.. **Graphic Retrieval, Analysis and Spatial Portrayal: An Information System for Idaho's Freshwater Lakes,** (Office of Water Research and Technology) 1982.

Abstract: Activities on a data processing project related to the Clean Lakes study, as GRASP (Graphic Retrieval and Spacial Portrayal), are described. The rationale, description and application of GRASP are delineated. The objective of GRASP is to develop a computer based storage and retrieval system having analysis capabilities to facilitate graphic and or spatial portrayal of raw data or of derived information needed by Clean Lakes researchers. An exhaustive search was made by the researchers to identify all Idaho lakes. The final form of this search includes lakes, reservoirs, and ponds. Each water body is uniquely identified by name, location, elevation, and size. A total of 123 high priority lakes are tagged in the system and given a water quality status (trophic status index).

82.138

National Technical Information Service. **Land Use in Urban Areas.,** (National Technical Information Service) 1982.

Abstract: Research reports are cited on various aspects of urban land use including transportation planning, water resource management, air pollution, and land use zoning. Excludes local studies. (This updated bibliography contains 283 citations, none of which are new entries to the previous edition.)

82.139

Groman, Robert Carl; **Computer Storage and Retrieval of Position - Department Data,** (Woods Hole Oceanographic Institution) 1982.

Abstract: A data storage and retrieval scheme has been designed and implemented which provides cost effective and easy access to location-dependent, 'geophysical' data. The system is operational on a Digital Equipment Corporation VAX-11/780 computer. Values of measured and computed geophysical parameters, such as geomagnetic field, water depth and gravity field, are stored in the library system. In addition, information about the data, such as port stops, project name and funding agency are also saved. These data are available to a time sharing computer uses, validated to use the software package, through a query language designed to interact with this data library. The data can be searched and retrieved both sequentially and geographically.

82.140

Huber, William A.; **Interactive Map Information Exchange System,** (Department of the Army) 1982.

Abstract: Apparatus and a method is described for quickly and accurately exchanging tactical military information between military field units utilizing existing communications systems over which digital map data is transmitted. Special maps are used which have the coordinates thereof encoded thereon in machine-readable form. A stylus responsive to said digital map data and is adapted to be moved over the coded map to facilitate the plotting of data points corresponding to said points to be transmitted as digital map data to other military units.

82.141

National Technical Information Service. **Laser Scanning: Technology and Applications.**, (National Technical Information Service) 1982.

Abstract: This bibliography contains citations concerning laser scanning techniques and its applications. Topics include a discussion of state-of-the-art laser scanning systems including the Scanning Laser Doppler Anemometer system, airborne scanners, and omnidirectional and volume laser scanners. Applications include the use of laser scanners in solar-cell inspection, integrated circuit testing, image acquisition, detection of oil slicks with scanning laser radar, plasma diagnosis, and cartographic scanning systems. (Contains 153 citations fully indexed and includes a title list.)

82.142

National Technical Information Service. **Photogrammetry: Equipment and Image Processing.**, (National Technical Information Service) 1982.

Abstract: This bibliography contains citations concerning aerial and satellite photogrammetric equipment and image processing methods and technology. Image correlation techniques are considered according to photogrammetric and mathematical fundamentals as well as the techniques for video-conversion, correlation, and rectification of video signals. Data processing system programs for the acquisition, storage, and processing of cartographic data obtained photographically are also considered. (Contains 115 citations fully indexed and includes a title list.)

82.143

National Technical Information Service. **Geodetic Positioning Networks.**, (National Technical Information Service.) 1982.

Abstract: Citations in this bibliography include the development and application of the geodetic positioning network. Utilization of inexpensive satellite receivers for cost-effective application; satellites for geodetic surveys; technology of weapon delivery systems based on a global positioning network; and geodetic control networks for accuracy, reliability, and systematic errors are among the topics discussed. Performance evaluations of the geodetic positions network for such applications as land, marine, space shuttle, and civil aviation included. (Contains 169 citations fully indexed and includes a title list.)

82.144

Rosenthal, Richard L.; **A Digital Technique for Constructing Variable-Width Lines**, (Army Engineer Topographic Labs.) 1982.

Abstract: This paper describes a digital technique for constructing variable-width cartographic lines. Specifically, an algorithm is developed for generating symbolized lines using multiply-stoked centerline data. Algorithmic development considers three factors: cartographic principles, inherent problems with existing algorithms, and hardward constraints imposed by specific output devices including the Defense Mapping Agency's Laser Platemaker. Software developed from the algorithm uses simple trigonometric functions and may be implemented in applications using vector data with vector or raster plotters. (Author)

82.145

National Technical Information Service. **NAVSTAR Global Positioning System**, (National Technical Information Service) 1982.

Abstract: This bibliography cites reports concerned with the global system of navigation satellites developed to provide immediate and accurate worldwide three-dimensional positioning by air, land and sea vehicles equipped with appropriate receiving equipment. Developments and applications of the NAVSTAR system are examined. Although the global positioning sytem is primarily a military system, civilian utilization and potential are included in this bibliography. (Contains 99 citations fully indexed and includes a title list.)

82.146

National Technical Information Service. **Remote Sensing of Agricultural Resources.**, (National Technical Information Service) 1982.

Abstract: Results of agricultural resources surveys using remote sensing techniques for crop identification, acreage measurement, land mapping, and forest density studies are discussed. A few abstracts pertain to identification of plant diseases and insect pests and fishery resources assessment. (This updated bibliography contains 291 citations, 26 of which are new entries to the previous edition.)

82.147

Clark, J.; **Integration of Imagery, Elevation Models and Polygon Coordinate Files through a Common Map Base**, (at: International Symposium on Remote Sensing of Environment (16th) at Buenos Aires, Argentina) (Science Applications, Inc.) 1982.

Abstract: The purpose of this study was the integration of remotely-sensed imagery and cartographic data by reprojecting them to match a common map base with a Universal Transverse Mercator projection. The three data types were: aircraft multispectral NS001 scanner imagery simulating the spectral channels of the Landsat-4 Thematic Mapper from visible to thermal infrared; Digital Land Mass Simulator (or Arc-Second) digital terrain models; and, land use polygon coordinate files created by Environmental Sciences Research Institute. Each of the data types had inherent resolutions and projections that were changed somewhat during the reprojection process. Techniques included control point selection from imagery and reference maps; map base calculations based on the cataloguing and manipulating of control points with the Image Based Information System (IBIS); and spatial and each of spectral rectifications of the imagery and cartographic data using algorithms of the VICAR (Video Image Communication and Retrieval) image processing system.

82.148

Pala, S.; **Space-Age Land Resource Mapping**, (in: Land, Vol.3, no.2) (Lands Directorate, Environment Canada) 1982.
Location: 42.

82.149

Inter-Agency Planning Branch, Municipal Affairs. **Alberta - Planning - Regional Planning System Study**, microlog #82-2521, (Inter-Agency Planning Branch, Municipal Affairs) 1982.

82.150

Strong, Wayne, L.; **Forest Surveys and Ecological Land Classification and Evaluation: Swan Hills Townsite Area**, microlog #82-2614, (Alberta Energy and Natural Resources, Resource Evaluation and Planning Division) 1982.

82.151

Noranda Mines Ltd., Norcomp Division. **A Computer System to Assist in the Design of Mine Layouts (MINLAY)**, microlog #82-1541/1, (Canada Centre for Mineral and Energy Technology) 1982.

82.152

Canada. National Research Council. **Remote Sensing REMOTEC Applications. The Use of Impulse Radar Techniques for Depth Profiling of Peat Deposits,** microlog #84-0311/2, (Division of Energy, Research and Development) 1982.

82.153

Strain, J. Robert; Fieser, Sherry; **Updated Inventory of Agricultural Computer Programs Available for Extension Use,** (Cooperative Extension Service, University of Florida, Institute of Food and Agricultural Sciences) 1982.
Location: 05.

82.154

Marble, Duane F.; **On the Application of Software Engineering Methodology to the Development of Geographic Information Systems, The Design & Implementation of Computer-based Geographic Information Systems,** (at: U.S./Australia Workshop held under the joint sponsorship of the U.S. Nat'l Science Fdn. & the Australian Dept. of Science & Technology) (Commission on Geographical Data Sensing & Processing) 1982.
Location: 20.

82.155

Yardas, David et al.; **Directory of Environmental Asset Data Bases and Valuation Studies,** 1982.
Location: 05.

82.156

Richason, Benjamin F. (Ed.); **Remote Sensing: An Input to Geographic Information Systems in the 1980s,** (at: Pecora VII Symposium at Sioux Falls, South Dakota) (American Society of Photogrammetry) 1982.
Location: 44.

82.157

Smith, Kenneth Walter; **Digital Processing of Radar and Satellite Images,** (McMaster University) 1982.
Location: 05.

82.158

Jaques, Dennis R.; Kananaskis Center for Environmental Research. **LANDSAT Mapping of Snow Cover to Identify Critical Wildlife Winter Range,** (Remote Sensing Center) 1982.
Location: 05.

82.159

Thompson, M.D. (Ed.); Canada Centre for Remote Sensing, Ottawa, Ont.. **LANDSAT for Monitoring the Changing Geography of Canada,** 1982.
Location: 07.

82.160

Monmonier, Mark S.; **Computer-assisted Cartography. Principles and Prospects,** (Prentice Hall) 1982.
Location: 07.

82.161

Garner, Barry J.; **Towards Model-Oriented Geographic Information Systems for Evaluating the Socio-Economic Effects of Resource Developments, The Design & Implementation of Computer-based Geographic Information Systems,** (at: U.S./Australia Workshop held under the joint sponsorship of the U.S. Nat'l Science Fdn. & the Australian Dept. of Science & Technology) (Commission on Geographical Data Sensing & Processing) 1982.
Location: 20.

82.162

Rosenthal, Richard L.; **A Digital Technique for Constructing Variable-Width Lines**, NTIS # AD/A 110 287, (U.S. Army Engineers Topographic Laboratories) 1982.
Location: 10.

82.163

Sauer, E. Karl; Elder, Linda; **Air Photo Interpretation for Terrain Analysis: Guide Book to J.D. Mollard's Landforms and Surface Materials of Canada**, 1982.
Location: 10.

82.164

Douglas, David H.; Doyle, Raymond A. (Ed.); **Computer-Assisted Cartography and Geographic Information Processing: Hope and Realism**, 1982.
Location: 10.

82.165

Technical Committee #1, Standards for the Classification of Topographic Features. **Can. Council on Surveying and Mapping. Nat'l Standards for Exchange of Digital Topographic Data**, (Topographical Survey Division. Surveys and Mapping Branch. Energy Mines and Resources, Canada) 1982.
Location: 10.

82.166

Batkins, Donald L.; Gustafson, Gregory; **Computer Assisted Mapping as Part of a Study on Acid Rain, Environmental Assessment and Resource Management**, (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.93-102.

Abstract: Recently the University of Minnesota, Duluth and the Environmental Protection Agency have begun a study titled "Inventory and Documentation of the Susceptibility of Aquatic Aquatic Resources to Damage by Airborne Pollutants." The airborne pollutant of most concern is acid precipitation and the object of the inventory and documentation is to develop a modeling methodology to discern the susceptibility of aquatic resources in various environments to damage from airborne pollutants. The study site is the Upper Midwest Lake States, with data collection focused on Northeastern Minnesota, Northern Wisconsin and Upper Michigan. The data collected in the inventory are being placed in a large computerized data base. Part of the analysis and documentation calls for the use of computer assisted mapping.

This paper is a progress report on how computer assisted mapping and data base management is being used for this project. There will be a discussion of how several off-theshelf computer mapping programs (e.g., GIMMS, EPPL, and SURFACE II) are being utilized. The paper documents an attempt to use the World Data Bank II as a GBF for this project. Specialized software developed for the project is also described.

Location: 01.

82.167

Bauer, David H.; Juhasz, Thomas C.; **Data Systems for Water Resources Management, Environmental Assessment and Resource Management**, (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.113-121.

Abstract: Water resources management decisions are facilitated by the use of well organized and readily available data. For the data to be converted to useful information, it must be analyzed and reviewed with the specific data needs of the users in mind, a task which is greatly aided by an appropriate data structure. Efficient water resources management is best achieved by using, as a foundation, data which are organized by hydrologic relationships. Easy access to current data is equally as important as appropriate structure. Thus, data storage and retrieval methods need to be capable of rapid update with sufficient flexibility to organize current knowledge in a usable format and response to availability of new data and changing data needs. Recently developed computer based water data systems are discussed. At the center is a hydrologic data base for the major surface waters of the contiguous 48 states. It contains unique identifiers and hydrologic connections for over 68,000 reaches. In addition to the river network, the data base contains the digitized traces of streams, lakes, coastlines and basin boundaries. The data base can be used as a framework for organizing water data and routing streamflow and pollutants through the nation's river systems. Linked to the file are a series of data modules including: ambient conditions, point source discharges and drinking water intakes. As the system is utilized, it is anticipated that new modules will be added. It is recommended that all the data modules be linked to one system to assure better data accessibility.

Location: 01.

82.168

Brooks, Kristina M.; **GIS Database Design Considerations: A Determination of User Tradeoffs, Environmental Assessment and Resource Management**, (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.147-157.

Abstract: This paper describes an experiment conducted by the author to identify the kinds of tradeoffs users are willing to make concerning levels of detail and cost in utilizing a geographic database. Two case studies were developed to measure the importance of several factors: resolution, land cover classification and cost in the utilization of a land use/land cover database. Case study participants were asked to evaluate the utility of a number of hypothetical databases to solve problems presented in the case studies. In a subsequent exercise, participants were given database development prices and asked to evaluate the cost effectiveness of each database in solving the problems. Although there was a great deal of individual variation in individual ratings, there was a consensus as to the relative ranking of databases in solving case study problems. Price had a definite impact upon participant ratings of effectiveness.

Location: 01.

82.169

Chock, M.I.; **PICDMS: A General Purpose Geographic Modeling System, Environmental Assessment and Resource Management**, (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.169-177.

Abstract: The Picture Database Management System (PICDMS) is a system developed and implemented at the University of California, Los Angeles. It performs a wide range of data processing functions on sets of two-dimensional variables, as requested in a simple user language. The data base can be a set of pictures, images, or functions including, for example, digitized Landsat satellite photographs, an array of elevation measurements, and census tract boundaries for the same area, together with data derived for the region from tables or other sources. Possible operations include definition of new pictures such as vegetation maps based on elevation values and ground truth tables as well as the set of photographs; modification of existing images according to arbitrary criteria; calculation of the minimum distance from a geographic point to a specified census tract; deletion of an image; listing of sets of values derived from the image data base; computation of numeric information; or printing of maps showing correlations among the existing variables. New data can be added without affecting old user programs. The user gives the minimum information needed by the system for completely flexible operation; the system finds the rest of the information it needs in a data dictionary. The user specifies the type of operation (add, replace, or delete an image, compute a distance or some arbitrary numeric function, list values or print a picture). He defines the format of any new data, specifies the part of the region to be operated on in terms of values of the existing variables, and describes the effect on a set of variables of surrounding values of other variables. Simple operations can be defined in one- or two-line English-like sentences; arbitrarily complicated ones can also be defined in a straight-forward manner. The system

analyzes the user command in terms of the existing data base and the relative amount of computer memory available, and builds a simple computer program to perform the operation. A future Operations Dictionary will allow still easier definition of standard procedures.
Location: 01.

82.170
Chulvick, Charles E.; **Scottish Rural Land Use Information System Project, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.179-188.
Abstract: This paper provides a description of an important effort in land use data processing in Great Britain. The organization, motivation and technology used in a pilot project are presented and discussed. The results of the research are also presented along with information on how the data can be acquired by interested researchers. The paper does not go into great detail but rather presents a snapshot of the multi-faceted project in order to bring it to the attention of others working in this field.
Location: 01.

82.171
Clarke, A.L.; Gruen, A.; Loon, Joseph C.; **The Application of Contour Data for Generating High Fidelity Grid Digital Elevation Models, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.213-222.
Abstract: Digitized contours are increasingly being applied as a data source for generating regular grid digital elevation models (DEMs). The special characteristics of contours as a DEM data source, and some published contour-specific interpolation algorithms, are reviewed in this paper. Test results for three algorithms are presented, employing both synthetic and real surface data. The algorithms are: linear interpolation with four data points found in the grid axis directions (LIXY), linear interpolation within two data points found in the approximate direction of steepest slope (LISS), and cubic interpolation within four data points found in the approximate direction of steepest slope (CISS). The results indicate that high fidelity DEMs can be generated from contours, particularly when associated terrain features, such as break lines, ridges and spot heights, are incorporated into the input data. The root mean square errors of interpolated heights, relative to the contour data, range from 3% to 27% of the contour interval, depending on the interpolation algorithm, surface structure, and composition of the input data. Error surface contours are employed to illustrate the extent of systematic errors in the interpolated DEMs. The fidelities of the DEMs interpolated by means of the steepest slope algorithms are significantly higher than those resulting from grid axis interpolation.
Location: 01.

82.172
Selden, David D.; Domaratz, Michael A.; **Digital Map Generalization and Production Techniques, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA Remote Sensing Commission IV: Cartographic and Data Bank Application of Photogrammetry and Remote Sensing at Crystal City VA, USA) (American Society of Photogrammetry) 1982 pp.241-247.
Abstract: Two evolving aspects of the cartographic process, digital map generalization and procedures for cartographic manipulation of digital data, will be discussed in this paper. The application of digital techniques to cartographic data has greatly facilitated the cartographer's capability to quickly produce maps of various scales and projections. The hierarchical data structure and unique data content of the U.S. Geological Survey's 1:2,000,000-scale data base offer increased flexibility and enhance these cartographic production capabilities. The explicit encoding of major cartographic categories as well as internal category

differentiation (for example, rivers, perennial vs. intermittent; federal lands, national parks vs. national forests) permit cartographic display appropriate for particular scale and theme criteria. The actual cartographic portrayal of these digital data, while based on the coding structure, also requires an efficient interfacing of human/software/hardware components. Finally, compliance with high cartographic standards and exploitation of the data base's potential are dependent on the development of effective digital cartographic production methods.

Location: 01.

82.173

Whitehead, Victor S.; Ryland, W. Eugene; Johnson, William; Duggin, Michael J.; Piwinski, Dana; **Angular Limits on Scanner Imagery for Vegetative Assessment, Environmental Assessment and Resource Management**, (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV ar Crystal City, VA) (American Society of Photogrammetry) 1982 pp.275-284.

Abstract: Tracking the condition of field crops by remote observation requires frequent (about weekly or more often) repetition of coverage. Landsat data alone does not provide this frequency of coverage and must be supplemented by other sources of information such as soil moisture models and alarm models driven by meteorological inputs. Satellite systems with a wider scanning capability than that of Landsat or with a pointing capability can provide frequent acquisition. This frequency increase is provided at the expense of spatial resolution and/or consistency in viewing geometry, thereby confounding interpretation of the observed data. As the viewing angle departs from nadir, the path length of the signal increases, amplifying atmospheric effects; and the scene content (fraction of soil, vegetation and shadow in the scene) varies. The effects of these phenomena are apparent even over the relatively narrow scan angle of Landsat.

Using NOAA-6 and -7 Advanced Very High Resolution Radiometer (AVHRR) data the magnitude of these effects for wider angles have been considered. The degree to which several existing models can correct for these effects are being considered along with the sensitivity of various vegetative indices. Practical limits to scan angle for vegetative assessment using current technology are being established.

Location: 01.

82.174

Honablew, Joseph A.; Schlueter, Joseph J.; Noma, Arthur A.; **Software for Three Dimensional Topographic Scenes, Environmental Assessment and Resource Management**, (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.397-406.

Abstract: The paper discusses the current capability for portraying three dimensional topographic scenes at the Defense Mapping Agency Hydrographic/Topographic Center and a background of its current usage and potential applications. A number of illustrations of scenes produced using Digital Terrain Elevation Data (DTED) and overlayed Digital Feature Analysis Date (DFAD) will be presented. Planned enhancements will be discussed with illustrations of type of results to be produced.

Location: 01.

82.175

Hsu, Shin-yi; Huang, Xingyuan; **Raster-Vector Conversion Methods for Automated Cartography With Applications in Polygon Maps & Feature Analysis, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.407-418.

Abstract: In this paper, we discussed the concept of data base conversions between raster format and vector format. With a series of cartographic experiments, we have demonstrated that polygon maps can be generated from raster data without losing the visual quality provided that the editing process is performed to remove the grid cell effect. The methodologies discussed in this paper can therefore serve as a model for using raster data for automated cartography.

Location: 01.

82.176

MacRae, Barry D.; Rogers, Robert H.; Jaworski, Eugene; **Landsat Capability Assessment Using Geographic Information Systems, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.419-427.

Abstract: With the recent availability of large accumulations of detailed cartographic and other spatial data, various groups including government planners, engineering consultants, and resource managers are seeking computerized methods to store and manipulate the mapped data bases. This need has led to the development of computer-based geographic information systems (GIS) which replace the traditional overlay approach in land capability analysis (McHarg, 1969). More recent GIS software features a variety of parameter modeling procedures, color CRT display interactive capability, proximity modeling, and the ability to enter remotely-sensed data (e.g., satellite, aircraft, etc.) and input parameters.

Location: 01.

82.177

Rowland, E. Bruce; Smart, Charles W.; Jolly, Rebecca L.; **TVA's Geographic Information System: An Integrated Resource Data Base to Aid Environmental Assessment & Resource Management, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.429-436.

Abstract: The Tennessee Valley Authority (TVA) has implemented a computerized Geographic Information System (GIS) to aid a wide range of environmental assessment and resource management activities. These activities vary in scope from region-wide to site-specific considerations. A major area of application is the administration of reservoir land. There are 23 multipurpose reservoirs in the 7-State TVA system with a combined total of 300,000 acres of land, 660,000 acres of water surface, and 10,000 miles of shoreline. These land and water resources are managed for multiple uses such as forestry, wildlife, fisheries, recreation, and navigation. In addition, TVA annually receives more than 1,500 external requests for the use of reservoir land for a diversity of activities from commercial and industrial development to private boat docks. This paper describes how the data storage, selective retrieval, analysis, and display capabilities of the GIS are being used to aid development of overall reservoir land use plans, formulation of detailed land management prescriptions, and assessment of environmental impacts related to requests for the sale, transfer, or other use of reservoir land.

Location: 01.

82.178

Spencer, J.P.; Krebs, P.V.; **A Digital Data Base for the National Petroleum Reserve in Alaska, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.461-469.

Abstract: The Bureau of Land Management (BLM) has the responsibility to prepare environmental assessments and environmental impact statements in support of the upland oil and gas leasing program on public lands. One of the first areas being leased in Alaska is the 23.5 million acre National Petroleum Reserve in Alaska (NPR-A). A digital data base has been prepared for NPR-A. This digital base includes landcover, elevation, slope, aspect, NPR-A administrative boundary, 1:250,000 scale quadrangle boundaries, 8 lease study areas and 124 lease sale blocks. The landcover information is from classified Landsat data, terrain data are derived from digital elevation models; and boundaries are digitized from map bases. When making decisions to approve, disapprove or modify oil and gas activities in NPR-A, BLM is required by law to mitigate "reasonable foreseeable and significantly adverse effects" on surface values. A digital data base allows the resource specialist or land manager to foresee conflicts by analyzing the characteristics of an area which may experience oil and gas operations. Data of interest can be displayed in map or tabular format. The digital data base for NPR-A has been used in the preparation of the environmental assessment, evaluation of lease study areas, characterization of potential lease sale blocks, wildlife habitat analysis, road suitability, winter trail route selection, water supply for potential drilling sites, and viewshed analysis.

Location: 01.

82.179

Madill, R.J.; **The SHL-RAMS System for Natural Resource Management, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-Assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.509-511.

Abstract: A system for natural resource management utilizes modern computing science principles to provide facilities for the formulation, analysis and solution of natural resource management problems. The challenge to system builders such as Systemhouse Ltd., is to look beyond the world of bits and bytes, and to adopt the frame of reference of the natural resource professions. This perspective is essential for the successful acceptance and use of computer based tools.

SHL-RAMS is a computer based system for natural resource mapping and analysis. The system aims to reduce the tedious and repetitive operations, such as drafting and manual numerical analysis, and thereby to increase the time available for creative problem solving and the exercise of judgment. The latter processes are made more efficient by the provision of flexible line mapping, thematic mapping and report generation facilities.

Two applications of SHL-RAMS are reviewed - the mapping and analysis of forest biomass data, and the charting and modeling of ice conditions in Canada's north.

Location: 01.

82.180

Miller, Stephan W.; **A Raster Encoded Polygon Data Structure for Land Resource Analysis Applications, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 Fifth International Symposium on Computer-assisted Cartography & ISPRS IV, at Crystal City VA, USA) (American Society of Photogrammetry) 1982 pp.529-536.

Abstract: A prototype structure for aerial data sets is discussed in the context of providing efficient data storage, retrieval, and analysis as required by land resource analysis applications. The prototype is a "raster-encoded polygon format" and is derived from a run-length raster format in which each run has multiple attributes associated with it. A transformation program, involving the first phase of the raster-to-vector conversion process, associates each run with a parent polygon entity. The total size of each entity, and information concerning its adjacency to other entities, are recorded in an entity table along with all attribute values for the entity. This results in a reduction of total volume of the run-length raster file, and simplified subsequent manipulation and retrieval operations based upon attribute values of the data. The underlying raster structure retains its advantages for overlaying new data sets and complex retrieval operations. Since the parent polygon area and adjacency relationships are identified, queries based upon threshold size or adjacency can now be addressed with what is essentially a raster data structure.

Location: 01.

82.181

Payne, Roger L.; **Geographic Names Information System: An Automated Procedure of Data Verification, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.575-580.

Abstract: The U.S. Geological Survey has researched and developed an automated geographic names data base to help meet national needs and to provide informational and technical assistance to its mapping program. The Geographic Names Information System (GNIS) is currently capable of providing data for approximately two million names and their related features in the United States and its territories. Cartographers can retrieve, manipulate, and organize name information to meet many mapmaking requirements. An automated mapping procedure has been developed to verify data submitted during the initial compilation of GNIS. This procedure has been expanded to assist the new provisional mapping program of the USGS, and it has proven to be valuable preliminary research for a program of automated typesetting and name placement. Also, research is being conducted toward the eventual incorporation of information from the System into the Survey's Digital Cartographic Data Base.

Location: 01.

82.182

Rue, Darryl L.; **Computer-Assisted Feature Analysis for Digital Landmass System (DLMS) Production at DMA, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-assisted Cartography & ISPRS IV at Crystal Lake, VA) (American Society of Photogrammetry) 1982 pp.639-648.

Abstract: The Defense Mapping Agency produces digital feature and terrain elevation data. These data are combined to form the Digital Landmass System (DLMS) which is used to support advanced aircraft simulators and navigation systems. Recent technical acquisitions are being implemented to improve digital feature production methods. This paper discusses the transition from labor-intensive, manual production methods to computer-assisted distributed data processing methods. On-line data entry, real-time data validation, LANDSAT digital image processing applications, computerassisted analytical photogrammetric stereo-plotter systems feature extraction, interactive data editing, quality control procedures and sensor simulation systems are presented. Research and development efforts in the areas of all-digital production systems are also discussed.

Location: 01.

82.183

Tamm-Daniels, Frederick L.; **The Application of Structured Systems Analysis to the Development of an Automated Mapping System, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.659-666.

Abstract: In many cases, automated mapping systems seem to have been designed and acquired without due regard for their intended use. A structured, systematic approach, however, increases the chances of successfully implementing such a system. This paper focuses on how the Mapping Services Branch and the Computer Systems Development Branch of the Tennessee Valley Authority (TVA) used such a structured approach in conducting the first phase of system acquisition (i.e., a feasibility study).

The use of a commercially available methodology enabled the project team to proceed with the feasibility study in a logical order, starting with the project scope, continuing through problem identification and general system requirements, and ending with a financial analysis of the proposed system. We believe this approach has greatly improved TVA's chances of success in designing, acquiring, and implementing a system for digital photogrammetric-based mapping, map compilation, and revision of 1:24,000 and 1:100,000 national map series topographic quadrangles, cadastral maps, and special-purpose mapping to support

such TVA programs as recreation, power, and wind energy.
Location: 01.

82.184

Theis, Richard F.; **Raster Data Acquisition and Processing, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Int'l Symposium on Computer-assisted Cartography & ISPRS IV at Crystal City, VA) (American Society of Photogrammetry) 1982 pp.667-676.

Abstract: The National Mapping Division of the U.S. Geological Survey has the responsibility for building and maintaining a Digital Cartographic Data Base (DCBD) to support the National Mapping Program. A major task which must be accomplished to fulfill this mission is the conversion of data contained in over 40,000 published 1:24,000-scale topographic maps to digital form for entry into the DCDB. The raster data acquisition and processing system being developed for this task is comprised of three components: (1) raster scanning and editing on a Scitex Response 250 System; (2) raster-to-vector conversion on a DEC minicomputer; and (3) vector editing and attribute tagging on an Intergraph Interactive Graphics Design System. The system, still in the early stages of development, has established the feasibility of raster scanning and processing as a viable method of data capture.

Location: 01.

82.185

Wilson, Paul M.; **Environmental Assessment With BASIS, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 Fifth International Symposium on Computer-assisted Cartography & International Society for Photogrammetry and Remote Sensing Commission IV: Cartographic and Data Bank Application of Photogrammetry and Remote Sensing, at Crystal City VA, USA) (American Society of Photogrammetry) 1982 pp.693-702.

Abstract: The use of automated techniques for environmental assessment has developed significantly in the past two decades. Although there has been equally rapid advancement in the practice of geographic data handling, the techniques of this field have been infrequently applied to assessment projects. This is particularly true of large area data systems created for regional or statewide planning applications. One regional data base - BASIS in the San Francisco Bay Area - has recently been used for several local and subregional environment assessment projects. These applications illustrate the technical and institutional barriers which must be overcome to use geographic data bases in environmental assessment work.

Location: 01.

82.186

Nicholson, John K.; **Interactive Land Use Simulation: A Tool For Local Decision Makers, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis Minnesota, USA) 1982 pp.110-117.

Abstract: For much of rural America, the term "User friendly" software must take into account the fact that most small communities can only afford small, inexpensive computer systems. This paper presents an interactive land use package called Micro-Sieve written for a micro-computer with the prime objective being direct use by the local decision makers. The program is designed to aid the user in making zoning and other land use decisions by looking at the natural resource and political limitations of the land. Specifically, the user may choose from a number of criteria, defining, for example, suitable areas for recreational development, unbuildable locations, or visually sensitive areas. No prior knowledge of computers nor even typing skills are required to utilize the program. The paper also documents the use of the simulation package in the small Utah community of Laketown on Bear Lake.

Location: 01.

82.187

Dakan, A. William; **Microprocessor Based Cartography for Urban Information Systems, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis Minnesota, USA) 1982 pp.147-158.

Abstract: Microprocessors have been increasingly utilized by planning, community development, public works, and other municipal agencies for statistical analysis, information retrieval, and word-processing. A number of methods are now available for producing maps, charts, and diagrams utilizing microprocessor technology that makes use of their graphics capability. Three general methods are reviewed for making maps on an APPLE-based system. These methods utilize different hardware configurations and software packages and vary greatly in the type of coordinate and attribute data required.

Location: 01.

82.188

Robinson, Vincent B.; **Development of a Microcomputer Urban Information System Unit in Colombo, Sri Lanka, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis Minnesota, USA) 1982 pp.173-183.

Abstract: In many developing countries there are organizations which have a need for computerized spatial data management systems. However, these organizations rarely have the capital necessary to purchase, maintain, and staff a mainframe or minicomputer system. The Urban Development Authority in Colombo, Sri Lanka has, with the aid of the United Nations Development Programme and the United Nations Centre for Human Settlements (HABITAT), begun the installation and development of a Land Use Data Bank (LUDB). The LUDB is a geographic data base which is linked to the mapping and analysis capabilities of the Urban Data Management Software (UDMS) package developed by HABITAT. The system is being developed on a WANG 2200VP microcomputer. This paper presents an overview of the project with special emphasis on the problems encounterred and the commonality of this project with development of local government computing in the developed countries.

Location: 01.

82.189

Cardinal, Aurele; Godbout, Pierre; Corbeil, Jean; **On the URMAP System: Enhancement of Decision Process in Urban Mangement Planning with Applications, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis Minnesota, USA) 1982 pp.184-193.

Abstract: The URMAP-SYSTEM, developed by a multidisciplinary team, is a dynamic computer aided urban management planning methodology. It is designed as a decision enhancement tool for the decision taker. URMAP is composed of a group of interactive models: a land use allocation model, URMAP-PLAN, allowing the user to generate and analyse different planning options taking into account the environmental, economic and social dimension of the urban fabric into which the project is integrated. A second model, URMAP-FISC allows the fiscal impact analysis of a project upon municipal finances taking into account operation and investment expenses compared to the sum of fiscal revenues. The third model, URMAP-HYDRAU is a rain water simulation model coupled with URMAP-PLAN. This new technology allows the analyst to go through a systematic and rational planning process without preconceived solutions or result of incomplete or non-exhaustive analysis. It also requires and helps the elected administrators to look at precise alternatives, being properly supported with a quantitative analysis. URMAP is implemented on a SPERRY-UNIVAC Model V77 Minicomputer system.

Location: 01.

82.190

Godbout, Pierre; Cardinal, Aurele; Corbeil, Jean; **On the R&D of the URMAP System: A Computer Aided Decision Enhancement Urban Management and Planning Methodology n, Practical Applications of Computers in Government,** (at: Annual conference of the Urban and Regional Information Systems Association at Minneapolis Minnesota, USA) 1982 pp.194-204.

Abstract: The URMAP System is a dynamic, computer assisted, interactive fully user oriented, benchmarked, tested and operational general purpose urban planning decision support methodology. It has been implemented on a SPERRY-UNIVAC Series of mini-computers of the V-77 model. The system has been researched and developed with the specific and declared intention to fill the planning needs of medium size and small cities. It was designed to serve as both an administrative and an executive decision enhancement tool. On its first application, it helped save 18 million dollars for the City of Anjou (Quebec)-population of 36 000; then 12 million for the City of St. Leonard (Quebec)-population of 85 000-and later 57 million for the City of St. Hubert(Quebec)-population of 56 000-in urban drainage infrastructure costs alone and helped generate close to three hundred million dollars of real estate by upgrading plus values.

Location: 01.

82.191

Coan, Gerry; **The Installation and Management of an Interactive Computer Mapping System, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Associaton at Minneapolis Minnesota, USA) 1982 pp.205-213.

Abstract: This paper provides advice to those preparing to install a "turn-key" interactive computer mapping system. It covers organizational considerations, staffing, site preparation, and dealing with vendors. The desirability of the user having some technical expertise is stressed. But the paper also recognizes that the unique customer support arrangements that come with such systems allow users with little or no technical expertise to play the game. Therefore the paper provides advice for a range of situations.

Location: 01.

82.192

Saltman, Roy G.; **Developing the Class Code Structure for an Extensive Geographic Data File, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information System Association at Minneapolis Minnesota, USA) 1982 pp.214-225.

Abstract: FIPS 55 is an extensive file that includes several kinds of geographic entities, e.g., populated places, townships, Indian reservations, and facilities. Class codes to distinguish entity types significantly add to the file's utility. The class code structure has been recently improved. Factors leading to the delineation of new classes and subclasses are described. Some factors are: organization of source databases, implementation of distinctions between indigenous and imposed names, and between concepts of "populated place" and "facility", provision of nationwide coverage of primary county divisions, and identification of sets of entities that cut across major class boundaries.

Location: 01.

82.193

Boisvenue, A.; Parenteau, R.; **The Geocoding System in Canada and Its Area Master File, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis Minnesota, USA) 1982 pp.226-237.

Abstract: This paper reports on a project in Statistics Canada which is dealing with computer methods for geographical coding, storage, and retrieval of Census data. The paper is divided in three major parts: Part I includes the general concept behind geographic coding; Part II is a general description of the system in use at Statistics Canada; and Part III looks at the future use of the Area Master File which is a basic component of the GRDSR System.

Location: 01.

82.194

McNabb, Grant H.; **Spatial Data, Geographic Referencing (GRS), and Computer Assisted Mapping (CAM), at the City of Calgary, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis Minnesota) 1982 pp.233-241.

Abstract: Allocation of Spatial Data into application areas-of-interest has historically been difficult and costly. The City of Calgary's Geographic Referencing and Computer Assisted Mapping systems are effective in redistricting major data bases, so that historical trends are not lost, but can be applied to the new districts. These two tools provide a faster and more economical way to aggregate data without regard to any existing district, zone, precinct or census area. For the first time at the City of Calgary, operational computer data from many different departments can be compared spatially and used for comprehensive planning.

Location: 01.

82.195

Somers, Rebecca M.; Piepgrass, E.B.; **Creation of Legal Base Maps by Computer Graphics at the City of Calgary, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.242-253.

Abstract: The City of Calgary has implemented a series of cooperative mapping projects in order to fulfill the City's rapidly growing geographic information needs. Central to this effort is the base mapping project that is being carried out in conjunction with the Province of Alberta. The Province supplies the survey coordinates from which the City creates the base map series. Parcel and other information are added in a series of overlays. Data entry procedures in the City's system are designed to make direct use of the Province's computed coordinates and other forms of survey data, as well as legal descriptions and various City departmental data.

Location: 01.

82.196

Barb, Charles E., Jr.; Zimmerman, Milva; Butot, Luis; **The ROV Geographic Reference System, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.268-281.

Abstract: This paper describes the design, development and initial application of the ROV Geographic Reference System to support analysis, planning and administration of Curacao, Netherland Antilles.

The ROV system is a set of tools for geographically coding addresses and common place names to planning zones and neighborhood, street segment and point place locations. The tools include an atlas of maps describing zones boundaries and neighborhood, street segment and point place locations; an automated directory of neighborhoods, streets and point places and their geographic cross-reference to zones; and, computer-listed indexes of the directory for location coding.

The system has been used initially to geographically code the 1981 Island census and a file of Island business establishments and schools.

Location: 01.

82.197

Zouzoulas, Gary; Van Sambeek, Jack; **Council Redistricting San Jose: An Interactive Graphics Approach, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.303-315.

Abstract: Utilizing an integrated computer graphics/database management system, the City of San Jose redrew 1981 City Council District boundaries to reflect the charter mandated equal populations criterion. Computer maps of census geography (census tracts, blockgroups and blocks) were automatically created under program control utilizing a digitized 1981 GBF DIME file. 1980 census population data was then loaded into the database, and subsequently linked to the appropriate geographic representations. Approximately a dozen variations of district boundaries were interactively drawn, census polygons assigned to Council Districts, and final reports and maps produced for use by the Redistricting Commission. This utilization of San Jose's interactive computer graphics system to assist the political decision making process produced highly accurate results with minimal turnaround time. Additionally, the database and graphics maps created by the redistricting project are presently being utilized by various City Departments to retrieve geoprocessed 1980 Census data.

Location: 01.

82.198

Portner, James; **Beliefs Regarding Issues Relating to Land Information, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.325-331.

Abstract: The quality of our present land information system is highly suspect. There is strong multidisciplinary concern for the many problems which plague our present land information system as well as a common desire to improve it. Though this common concern and desire for improvement does exist on a general level, it is questionable as to whether there is a consensus of belief regarding the most pressing problems in land information and the most appropriate and effective ways in which to address them. It is reasonable to assume that developing this belief consensus is a prerequisite to any comprehensive and multi-disciplinary effort to substantially improve our current land information system.

Location: 01.

82.199

Swank, Robert; **Data Sharing Though ADLIB: An Organizational Model, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.358-362.

Abstract: The Lane County Regional Information System (RIS) supports a multi-jurisdictional geographic information system. A major reason for the success and continuing development of the geographic data system is a multi-function site address file (ADLIB). ADLIB was not part of the original design for the geographic data system, nor are similar files frequently mentioned in the many documents that describe the development of geographic information systems. It was developed in response to the real needs of multiple users that collect and maintain data that must be related to data from other departments and agencies. It is a model of an organizational structure that facilitates data sharing by multiple users without sacrificing individual agency autonomy and control of information.

Location: 01.

82.200

Carlson, James R.; **ADLIB: A Multi-Function Site Address Library, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.363-368.

Abstract: ADLIB is a data and software system relating site addresses to other geographic information. It is the best example of a 'loosely shared' data file within the Lane County Geographic Data System. The file consists of the three primary geographic identifiers in use: site address, tax map and lot number, and state plane coordinates. The system is used primarily as on-line file giving multiple users a cross-index between the geographic identifiers. ADLIB is fully accessible by all users of the Regional Information System (RIS). The system provides a primary access point to various user maintained systems. In this sense, the system functions as an interactive data dictionary to other on-line files within the RIS.

Location: 01.

82.201

Crane, Edward; Domsch, Ronald E.; Hall, Steven M.; **Implementation of a Multi-Purpose Cadastre for Wyandotte County, Kansas, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.369-375.

Abstract: Wyandotte County has been engaged in the development of an ownership parcel-level cadastre for nearly 9 years. This project has encompassed the full range of tasks from defining and mapping the parcels to development of a major computer system to accommodate the cadastre. LANDS Data System (LANDS) was implemented during 1981 and it serves both the needs of a cadastral data base and the needs of local real estate tax administration. The technical details of system design and method of implementation will be discussed with emphasis on the experience of "running parallel" both an old computer system and LANDS simultaneously to enhance user acceptance.

Location: 01.

82.202

Eichelberger, Peirce; **Land Use and Space Use - Data Standardization Issues in Data Base Management, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.434-443.

Abstract: The design of complex urban information systems in a data base environment necessitates the use of numeric codes to facilitate data collection, storage, retrieval, use, analysis and sharing. A central issue in local government information systems is the adoption of coding standards that are applicable to the many system users. One issue is the adoption and standardization of a land use and space use coding scheme which should consider the following: definitive categories identifying most uses of interest to local departments and agencies, ease of use and assignment by governmental personnel, and is well documented and supported.

The 901 Standard for Fixed Property Uses as maintained and supported by the National Fire Protection Association (NFPA) is a useful scheme which is recommended for the following reasons:

1. helps improve the interlocking regulatory functions of government
2. greatly enhances access and inquiry capabilities
3. promotes data sharing among and between agencies
4. provides powerful analytical capabilities, and
5. is well documented and has benefitted from previous implementations.

Location: 01.

82.203

Kennedy, E.A.; Ritchie, R.G.; **Mapping the Urban Infrastructure, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.444-458.

Abstract: Urban administrations, faced with increasingly complex problems in the expansion, upgrading and maintenance of the urban utility network, are seeking new and innovative means of obtaining fast, accurate and up to date facilities data. The development of modern electronic surveying and computer mapping capabilities have provided powerful tools to meet these challenges without major increases in human resources. This paper discusses a solution to this problem which is currently being implemented jointly by the Province of Alberta and the City of Edmonton. It briefly describes the urban survey and mapping program being carried out by the province and discusses the development of an urban utility cadastre, which is a sub-system of the City's Geographic Base Information System. Included is an evaluation of the benefits of the technological and procedural approaches adopted.

Location: 01.

82.204

Schall, Larry J.; **Omaha Sewer Inventory-Management Program - A Geoprocessing Application, Practical Applications of Computers in Government**, (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.459-470.

Abstract: The paper discusses the City of Omaha's use of a geographic data base filing system for an ongoing physical inventory of its sewage and stormwater collection systems. It also discusses how this same data processing system is being used for the management responsibilities of budgeting, complaint handling, decision making and employee productivity monitoring.

The paper concludes with some ideas on how similar facility inventory/management programs might be useful in other organizations.

Location: 01.

82.205

Gersmehl, Philip J.; Napton, Darrell E.; **Interpretation of Resource Data: Problems of Scale and Spatial Transferability, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association at Minneapolis, Minnesota) 1982 pp.471-482.

Abstract: Information systems can serve two distinct purposes regional inventory or parcel classification - but the purposes are often incompatible because each has its own rules of sampling and data storage. Scale-related inventory errors may approach 10 to 40 percent and classification errors often exceed 60 percent in a resource information system. Additional errors of 10 to 50 percent are introduced when taxonomic categories are reinterpreted for a local purpose without local tests. The errors are often self-cancelling for reconnaissance purposes, but the display of the data in a form that allows identification of individual landholdings should be prohibited.

Location: 01.

82.206

Burns, Tony; **The Use of Integrated Terrain Unit Mapping for the Siting of Energy Facilities in Anchorage, Alaska, Practical Applications of Computers in Government,** (at: Annual Conference of the Urban and Regional Information Systems Association) 1982 pp.504-528.

Abstract: The Alaska Coastal Management Program (ACMP) required that local governments conduct a comprehensive resource inventory which described natural resources, land use and land status for local coastal management plans. The ACMP also required a resource analysis of sufficient detail so that specific state coastal management standards could be met and implemented at the local level of government. The standards required development of detailed analysis procedures to fully satisfy compliance with them. For example, the standard that addressed energy facility siting required that "sites suitable for the development of major onshore, nearshore and offshore facilities must be identified." Because of the vast array of siting criteria and siting requirements for a variety of possible energy facilities that could locate in Anchorage, the Municipality elected to automate all of its environmental and land use data. The computerized environmental data banks created through the process of mapping and automation were used to produce a series of basic data maps, interpretive opportunity and constraint maps, and capability/suitability models for the siting of energy facilities. This paper presents the process used to develop the integrated terrain unit maps (ITUM) and presents the results obtained from utilizing the ITUM approach.

Location: 01.

82.207

Eichhorn, Gerhard; **Land Information Systems in Education and Research,** (at: Canadian Institute of Surveying Centennial Convention at Ottawa ON) 1982 pp.118-132.

Abstract: To comprise all land related data of a certain region in Land Information System from the knowledge of these data and using modern measuring methods and electronic data processing is the task of surveyors today for an efficient national economy. To enable the younger generation to master these demands in informatics, greater emphasis is to be given to computer organization, data structures and software engineering in future. In addition more importance must be attributed to problems in planning techniques and the use of findings in thematic cartography.

In research there are to discuss the problems of decentral data processing, hierarchic system, coordination of multi-storage and multi-user systems and the development of new programming languages. Other problems to be studied are: Examination of variants of solutions by model projects, possibilities of "Real-Time-Geodesy", comprising possible users and their demands and appropriation of informations.

Location: 01.

82.208

Henssen, Ir. J.L.G.; **The Requirements and Significance of Land Registration and a Cadastre in Developing Countries,** (at: Canadian Institute of Surveying Centennial Convention at Ottawa ON) 1982 pp.177-193.

Abstract: After an explanation about what is understood by land registration, it is tried to give a view on the reasons for policy-makers to establish land registration or a cadastre.

Attention is paid to the significance of land registration and cadastre for developing countries by a comprehensive discussion of the advantages and disadvantages.

The chapter "legal basis" includes the very important principles of publicity and speciality as well as a discussion of the distinction between registration of deeds and registration of titles.

The chapter "financial aspects" explains the land registration and cadastral system as an instrument of levying taxes. Besides it deals with the economic aspect of adjusting the costs of accuracy to the needs and financial possibilities of each individual country.

Finally attention is paid to establishment and maintenance of land registration systems and cadastres as well as training and organization and the influence of the political system.

Location: 01.

82.209

Yates, Donald F.; **Cadastral Surveying: A Perspective From the Private Practice Sector,** (at: Canadian Institute of Surveying Centennial Convention at Ottawa ON) 1982 pp.213-221.

Abstract: This paper represents a perspective of surveying from a surveyor that has been in his own private practice for over twenty years. As well, Mr. Yates served as President of the Association of Ontario Land Surveyors from February 1981 to February 1982. This means of course that he has also served on the Canadian Council of Land Surveyors and has also attended many of the Provincial Association's annual meetings across Canada during the past year. His paper looks at surveying partly from some of the problems in private practice and also their relationship to Association affairs and interests. These problems tie into the poor economic times were are all facing.

Location: 01.

82.210

Collins, Stanley H.; **Digital Terrain Analysis,** (at: Canadian Institute of Surveying Centennial Convention at Ottawa ON) 1982 pp.331-344.

Abstract: Digital terrain analysis is defined as precisely as possible, and its historical development is sketched briefly. The data sources for digital terrain analysis are discussed, reference being made to national and provincial data bases, to digital photointerpretation, to Landsat and other raster imagery, and to the use of existing line maps. This distinction between digital terrain analysis and computer-assisted mapping is pointed out. The analysis of digital elevation models is included as a special case. The close methodological correspondence between digital terrain analysis and digital image analysis is examined in some detail, and the further confluence of these technologies is predicted.

Location: 01.

82.211

MacDonald, Connie L.; **Analysis of Ecological Data for Park Planning,** (at: Canadian Institute of Surveying Centennial Convention at Ottawa ON) 1982 pp.345-360.

Abstract: The Canada Land Data System (CLDS) along with its main software component the Canada Geographic Information System (CGIS) has been extensively used for natural resource management and planning. This paper will present a brief overview of the system. The National Parks of Canada have been chosen as an application of the system.

Location: 01.

82.212

Moon, George C.; Lehan, Tim J.; **Terrain Analysis and Mapping with THEMAPS and SPASIS,** (at: Canadian Institute of Surveying Centennial Convention at Ottawa, ON) 1982 pp.361-366.

Abstract: THEMAPS and SPASIS provide a powerful means of analysing and displaying digital terrain information. The THEMAPS system of programs allows the rapid interactive manipulation of terrain data using overlay techniques with either boolean or arithmetic operations.

SPASIS is an extension of the basic THEMAPS system which allows the inclusion of spatial relationships in the decision functions. This is useful in the determination of the effect of linear corridors or proximity restrictions.

THEMAPS and SPASIS were originally developed on large main-frame computer systems, however, the structural design of the two systems has enabled the implementation of major sections of the systems on microcomputers. Examples from both THEMAPS and SPASIS are presented and their applications on various hardware configurations are discussed.

Location: 01.

82.213

Chow, W.; Kirby, C.L.; **A Mapping and Resource Analysis System (MARS) at the Northern Forest Research Centre,** (at: Canadian Institute of Surveying Centennial Convention at Ottawa, ON) 1982 pp.367-386.

Abstract: This paper describes the Mapping and Resources Analysis System (MARS) operated by the Northern Forest Research Centre (NoFRC) of the Canadian Forestry Service in Edmonton, Alberta. MARS includes the Systemhouse Limited RAMS system, with additional software to convert polygon map information to a grid cell data base and to interact to a grid cell data base and to interact with a mapping program called GIMMS. The project was funded through the federal ENFOR program to: 1) demonstrate how forest inventories may be converted to biomass estimates; and 2) have these inventories displayed to facilitate forest management. MARS is capable of integrating map and satellite information for the updating of maps with regard to changes caused by forest fire, clear cutting, insect and disease damage, and chemical or other disturbances.

Location: 01.

82.214

Starr, Lowell E.; Guptill, Stephen C.; **Computer Assisted Cartography: A Multidisciplinary Activity**, (at: Canadian Institute of Surveying Centennial Convention at Ottawa, Ontario) 1982 pp.13-18.

Abstract: The advent of computer assisted cartography has brought about a symbiotic association of many scientific and technical disciplines. The modern cartographer is at the pivotal point of this association and is faced with the challenges of leadership in this high technology endeavor. The disciplines that build the "tools of the trade" for computer assisted cartography and the disciplines that use the data are becoming an integral part of the total process. The result is a multidisciplinary relationship that has exciting future implications. This relationship must develop answers to the challenges that lie before us, many of which cannot be resolved by cartographers alone. The key role for many cartographers will be to provide leadership in the establishment of standards and techniques that will permit the creation of integrated cartographic data bases. These data bases will contain data from a variety of sources and must be organized and structured in a manner that supports the production of multipurpose cartographic products and spatial analyses by a diverse body of users. Only the cartographic community with its experience with such data bases can serve as a focal point to ensure the effective utilization of this technology.

Location: 01.

82.215

Kesik, A.B.; **Remote Sensing and Cartography**, (at: Canadian Institute of Surveying Centennial Convention at Ottawa, Ontario) 1982 pp.29-49.

Abstract: Remote Sensing and Cartography represent two interrelated and interdependent technologies and scientific disciplines which are characterised by the fast growth and by an important impact on environmental studies, strategies of planning and management of the resources. Expected growth of the Remote Sensing technology will provide users with more, better, cheaper and diversified remote sensing data which could and should be implemented into the main streams of mapping activities. The world wide impact of the Remote Sensing technology on cartography is well documented by a new series of thematic maps, by additions of raster mode cartographic data into geographical atlases and by increased number of innovative cartographic illustrations in textbooks and regional geographical monographs. An important domain of interaction between Remote Sensing and Cartography refers to the education. The new programs of the advanced professional training and academic studies should emphasize the interrelations and interdependencies of both technologies.

Location: 01.

82.216

Siekierska, Ewa; **Processing Geographical Map Data in Raster Mode**, (at: Canadian Institute of Surveying Centennial Convention at Ottawa, Ontario) 1982 pp.157-170.

Abstract: Computer-aided data analysis and processing are becoming a standard working procedure for geographers and cartographers. Computer-assisted cartography uses mainly analytical procedures analogous to the mental and manual processes of map creation. These procedures are usually called the "vector mode." An alternative, the "raster mode", processes data sequentially, independently from the thematic content. The paper discusses the advantages and limitations of processing geographical map data using raster techniques. The operations examined belong to those most frequently performed in geography and cartography, for example calculations of areas, length of perimeters, width of lines, areas of overlays, and derivation of digital terrain models. The test samples of data obtained by scanning the colour separation sheets of topographic maps are included and the feasibility of processing such data on a small computer are discussed.

Location: 01.

82.217

Lodwick, Graham D.; **Satellite Remote Sensing in Surveying - Its Potential for Digital Terrain Modelling**, (at: Canadian Institute of Surveying Centennial Convention at Ottawa, Ontario) 1982 pp.401-416.

Abstract: Theoretically, satellite remote sensing offers the capability for topographic mapping, using either active or passive techniques. For example, surface detail has been measured directly by means of radar altimetry (such as on the GEOS 3 satellite). Alternatively, morphologic information is available indirectly from the visual impression of terrain ruggedness, obtained from multispectral scanners operating in the visible and near-visible wavelengths (such as on the Landsat satellites). Besides the use of direct interpretation methods, such as stereo viewing, digital analysis and enhancement of Landsat data can enable quantitative extraction of topographic information. At the present level of the technology, practical difficulties are related to the degree of definition of topographic detail obtainable, and resolution in terms of spatial accuracy. This paper discusses the limitations imposed by current sensor systems and, by reference to continuing research work at the University of Calgary, outlines how, even at this present stage, satellite remote sensing can be used to derive digital terrain models.

Location: 01.

82.218

Moore, Harold D.; **Landsat Increases Efficiency of Topographic Map Revision,** (at: Canadian Institute of Surveying Centennial Convention at Ottawa, Ontario) 1982 pp.417-425.

Abstract: Techniques are described for the operational use of Landsat satellite images in topographic map revision. Special equipment developed by Gregory Geoscience Limited is used to project and register the satellite data onto the 1:50 000 topographic map base. Areas of change are detected, identified, and mapped onto the map base. The procedure is repeated with a series of satellite images presenting different spectral and seasonal information. The composite of interpreted changes is used to directly revise 1:250 000 scale maps or to plan aerial photography over areas for 1:50 000 map revision. Revision of topographic maps using satellite data in this manner has proven to be fast, accurate and cost effective.

Location: 01.

82.219

Hamilton, Angus C.; **Introduction to the Concept of a Matrix for Land Information,** (at: Canadian Institute of Surveying Centennial Convention at Ottawa, Ontario) 1982 pp.485-494.

Abstract: The primary purpose in introducing the concept of a land information (L.I.) matrix is to provide a vehicle for facilitating communication within our profession and with other professions and laymen. By looking at the entire family of L.I. products at once it is much easier to understand the role and the relevance of each product than by looking at any one of them out of context. It can be to us what the periodic table of the elements is to physicists and chemists. A L.I. matrix is presented in which there is a row of the matrix for each S.I. map scale and a column for each family of L.I. products. It is shown that there is a need for a unit cost version of the matrix and some approximate unit cost ranges are presented.

Location: 01.

82.220

Turner, Brian J.; Baumer, George M.; **A State-Wide Landsat Data Base as a Source of Land Resource Information for Pennsylvania, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Intl. Symposium on Computer-Assisted Cartography and Intl. Society for Photogrammetry and Remote Sensing Commission IV at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.35-44.

Abstract: The Office for Remote Sensing of Earth Resources (ORSER) at The Pennsylvania State University has recently installed a mosaicked Landsat data base for the State of Pennsylvania on the University's IBM 370/3081. The mosaic of raw data is a selection of 1976 to 1979 minimum-cloud summer scenes. The initial data base was put together at the Jet Propulsion Laboratory (JPL) using the VICAR software package, but ORSER now has the capability of doing this. The data are registered to UTM coordinates and have been resampled to 57-meter square pixels. ORSER programmers have developed a unique way of formatting and storing the data for efficient retrieval, and a user-friendly conversational front-end for accessing the data base by country, forest district, UTM coordinates, or a statewide grid system. The requested data are retrieved and converted to the ORSER format for subsequent analysis. In cooperation with NASA/Goddard Space Flight Center personnel, a forest-nonforest binary mask has been devloped from, and registered to, the data base. This will be used to aid classification of gypsy moth defoliation levels from new Landsat data also registered to the data base. A new way of extracting information from the Landsat data base and incorporating in into existing geographic information systems has also been developed by ORSER associates. Additional uses for the data base are constantly arising. It is expected that it will form a major source of land-use and land-resource data in the state over the next several years.

Location: 01.

82.221

Foote, H.P.; Wukelic, G.E.; Blair, S.C.; **Digital Techniques for the Integration and Display of Multisource Data, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Intl. Symposium on Computer-Assisted Cartography and Intl. Society for Photogrammetry and Remote Sensing Commission IV at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.75-82.

Abstract: The Pacific Northwest Laboratory has been conducting basic research to develop and apply new digital techniques for processing and integrating remote sensing and geoscience data for energy-related applications. Example data sets include topography, surficial geology, gravity, magnetics, etc. This research has produced and tested extensive software for combining data from various sources to prepare a variety of unique computer-generated graphics (maps and displays). This paper describes the basic methodology involved in multisource data registration, integration, and display functions. Specifically, methods found most useful for handling image (photographs and maps) and non-image point-source, line, and numerical data formats are discussed in relation to raster vs. vector-polygon processing considerations. Types of multi-source data products (discipline and user-tailored) that have been computer generated and utilized are enumerated. Moreover, options for digitally combining or overlaying various data bases on a common format to generate new user products are discussed and examples presented. The latter includes a variety of display options, such as shaded contour and stereo. A brief description of basic hardware requirements is also provided.

Location: 01.

82.222

Middleton, Elizabeth M.; Bly, Belden G.; Garber, John M.; **An Evaluation of Landsat Data for Input to a State Geographic Information System, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Intl. Symposium on Computer-Assisted Cartography and Intl. Society for Photogrammetry and Remote Sensing Commission IV at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.83-94.

Abstract: A cooperative study was undertaken by the Eastern Regional Remote Sensing Applications Center and the Maryland Department of State Planning (DSP) to determine the correspondence of land use data in a special Maryland Automated Geographic Information (MAGI) System 4.6 acre grid cell data base with Landsat categorized land cover data geocorrected to 1.54 acres/pixel. The DSP 21-category land use scheme was reorganized into eight categories: forest, crop/pasture, water, transitional, commercial/ industrial/institutional, medium density, residential, low density residential, and wetlands. The MAGI System land use data, encoded in separate data layers for primary and secondary use, were tabulated several ways to represent a range in interactive and computational strategies: (a) primary land use interpreted as either 0 or 100 percent per cell (common strategy by users), (b) primary land use, adjusted to recorded proportions between 0 and 100 in increments of 20 percent, (c) the primary and secondary land use together, adjusted to the same recorded proportions as above (P' + S'), and (d) the (P' + S') for cells with specific MAGI land use labels only. In general, the results indicated that with procedure (c), a 90 percent or better correspondence of the MAGI and Landsat data could be achieved for 4 of 7 categories. A high correspondence was achieved for 6 of 7 categories and near acceptable correspondence for the seventh category with procedure (d). An additional finding was that the Landsat results degraded to the MAGI grid cell size were considerably less satisfactory than the full resolution data, with decreases in correspondence of up to one order of magnitude for some cover types. These results have been translated into strategies for users of the MAGI System.

Location: 01.

82.223

Chamard, Roger R.; **The Analytical Stereoplotter - The Data Gatherer for Computer Assisted Cartography and Integrated Resource Mapping, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Intl. Symposium on Computer-Assisted Cartography and Intl. Society for Photogrammetry and Remote Sensing Commission IV at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.115-121.

Abstract: This paper explores the 'in depth' use of the analytical stereoplotter as the 'front end' of any computer assisted mapping system. The need for accurate data input into computer assisted mapping has too long been ignored in favor of 'make do' data. Non-accurate data leads to long-range problems as the users expand on the capabilities of computer assisted mapping and report generation for development of action plans. The analytical plotter economically can be used to gather data from most remote sensed imagery. Through its ability to measure quickly and accurately, it is relatively easy to tie all data to a world coordinate system. The digitizing process is fast and accurate. The analytical plotter data output can easily be formatted into any data base requirement directly, without having to transfer data to existing maps for later digitizing. Different remote sensed data sources are discussed and the processes of converting data using the analytical plotter is outlined. The paper discusses how the analytical plotter also directly 'front ends' into various mapping systems.

Location: 01.

82.224

Wright, R.; Foschi, P.G.; **Geocoding of Land Cover Data By Remote Sensing and Microcomputer, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 - 5th Intl. Symposium on Computer-Assisted Cartography and Intl. Society for Photogrammetry and Remote Sensing Commission IV at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.263-271.

Abstract: A remote sensing compatible land cover classification (32 classes) was revised for the rural/urban fringe of Aberdeen, and a method for the interpretation and recording of land cover data from aerial photography of different dates was tested. A software system was written to facilitate recording of the National Grid Square based data, to determine boundaries within grid squares, to sum class areas, to detect and sum the losses and gains in selected classes, to identify classes which have replaced agricultural land, and to determine land capability lost. Output is in the form of lineprinter maps and area tabulations. The system was designed to cope with geocoded data files from diverse sources including aerial photography, maps, and ground surveys. This approach was applied to 1966 and 1981 aerial photography of Old Machar Parish (an area of about 29 km2 in the Aberdeen City District) to identify and quantify agricultual change. Results were compared with the area of agricultural land lost according to the annual farm census for Old Machar Parish compiled by the Department of Agriculture and Fisheries for Scotland. Time estimates for the interpretation and processing of the data were calculated.

Location: 01.

82.225

Wray, James R.; Gaydos, Leonard; **Vegetation and Land Cover Map and Data for an Environmental Impact Statement, Arctic National Wildlife Refuge, Alaska:, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 -5th Inter Symp on Comp-Ass't Carto & Inter Soc for Photo & Remote Sens Comm IV: Carto & Data Bank Appl of Photo & Remote Sens at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.283-286.

Abstract: The U.S. Geological Survey has published map I-1443, Vegetation and Land Cover, Arctic National Wildlife Refuge Coastal Plain, Alaska. The map was prepared in cooperation with the U.S. Fish and Wildlife Service (USFWS) and the U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL)for an environmental impact statement in anticipation of seismic oil exploration. Production of this map is a multistage demonstration of automated thematic cartogr[illegible]pplied in an interagency approach to a problem in 'Environmental Assessme[illegible]d Land Management,' theme of the Auto-Carto 5/ISPRS IV Joint Symposium. Five stages begin with capture of spatial data in digital format and end with printing of the map and area statistical summary. A copy of the map is in the pocket inside the back cover of these proceedings.

Location: 01.

82.226

Harper, Janet; Ross, G.A.; **Digital Analysis of Landsat Data in The Athabasca Delta, Environmental Assessment and Resource Management,** (at: Auto-Carto 5 -5th Inter Symp on Comp-Ass't Carto & Inter Soc for Photo & Remote Sens Comm IV: Carto & Data Bank Appl of Photo & Remote Sens at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.319-326.

Abstract: The usefulness of digital image analysis of change in the landforms of the Athabasca Delta located in northeastern Alberta, Canada was tested. DICS tapes were analyzed using a small computer and standard statistical programs. The study area is unique in Alberta, ecologically critical to wildlife and an important part of the land-based economy of the local community. The Delta has been drastically changed in the past by a hydro-electric development upstream and could be affected in the future by several developments both upstream and downstream. DICS tapes for approximate anniversary dates in three years were obtained, along with corresponding black-and-white or color infrared airphotos. The airphotos were used to classify sample pixels, which were then subjected to discriminant analysis to obtain classification functions. Change between images was determined. The methodology has relatively little potential for monitoring of geomorphological change in the Athabasca Delta, because of the complex nature of the landforms. If a smaller number of generalized units were the subject of analysis, the methodology would be more useful.

Location: 01.

82.227

Johnston, D.M.; **The Use of Integrated Mapping Systems in Environmental Impact Assessment and Land Use Planning, Environmental Assessment and Resource Management,** (at: Auto-Carto 5-5th Inter Symp on Comp-Ass't Carto & Inter Soc for Photo & Remote Sens Comm IV: Carto & Data Bank Appl of Photo & Remote Sens at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.353-358.

Abstract: This paper describes an attempt to integrate the capabilities of several automated mapping systems in the development of land use planning guidelines for the Monadnock Region of southwestern New Hampshire. It focuses on: 1) The development of a digital cartographic data base, 2) The processing of that information through the use of a geographic system to develop alternative regional land use plans, 3) The development of an environmental impact evaluation model to be applied to those plans, and 4) Presentation of results in the form of shaded relief maps in color. The data base involved was constructed from existing maps, field surveys, and LANDSAT imagery. Planning and impact evaluation models were developed in response to specific economic, environmental, and aesthetic siting criteria. The graphic techniques employed were specifically designed to facilitate public comprehension and acceptance of complex analyses and recommendations. This work was carried out in 1981 through the Harvard Graduate School of Design with assistance from ERDAS, Inc. of Atlanta, Georgia, the Yale School of Forestry and Environmental Studies, and the Harvard Laboratory for Computer Graphics and Spatial Analysis.

Location: 01.

82.228

Makarovic, B.; **Data Base Updating by Digital Mono-Plotting, Environmental Assessment and Resource Management,** (at: Auto-Carto 5-5th Inter Symp on Comp-Ass't Carto & Inter Soc for Photo & Remote Sens Comm IV: Carto & Data Bank Appl of Photo & Remote Sens at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.433-442.

Abstract: The potential impact of the digital mono-plotting (DMP) system on updating existing map series and on transition from graphical to digital data base is outlined. Analogies are pointed out between updating and data pre-editing of original mapping, and furthermore between the updating and thematic mapping. Analogue and digital procedures for updating are defined and the data flows discussed. Attention is focussed on preparation, mensuration, and transformation stages. A distinction is made between the 'semantic' and the 'geometric' data and operations, and further between the 'basic' and the 'process-control' data. A review is given of the issues concerning changes in terrain, of the different data sources, and of the means and techniques for change perception. Attention is also given to the transformation of the new locational data from photo-to model space with the inclusion of differential heights. Finally, the operational characteristics of DMP are reviewed, and the properties affecting technical decisions and work management are summarised. DMP is a supplement of photogrammetric stereoplotting, its potentials tend to meet the requirements for an up-to-date data base.

Location: 01.

82.229

Mehta, H.S.; Patel, A.N.; **Integrated Resources Inventory using Landsat Data, Environmental Assessment and Resource Management,** (at: Auto-Carto 5-5th Inter Symp on Comp-Ass't Carto & Inter Soc for Photo & Remote Sens Comm IV: Carto & Data Bank Appl of Photo & Remote Sens at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.443-446.

Abstract: The economic development of a nation depends on the planned and proper utilization of its renewable and non-renewable natural sources. Planning is a continuous process for decision making, whether it is long term or short term. Lack of relevant data in time often forces planning decisions based on inadequate and superficial information. As such, a good data base is essential for planning activities to lead to more reliable decisions. The major natural resources of the country viz., the land resources, the mineral resources, the forest resources and the water resources, if surveyed and developed properly will assist in a region's rapid economic development. With the recent development in remote-sensing techniques, it has become possible to carry out such surveys much more rapidly than what was possible in the past. With this in view, an attempt is being made in this work, to illustrate the application of remotely sensed data of Landsat-2 in preparing resources inventory of Indore District of State of Madhya Pradesh, India. The test area has co-ordinates: 75 25' N -- 76 15' N and 22 20' E -- 23 05' E The general topography of this terrain varies from 500 to 560 met. above MSL. Once the concept of an integrated investigation for resources survey is known, it is possible to visualize the

difference in terms of results that will pave way for more effective, speedier and optimum project possibilities.
Location: 01.

82.230
Mellor, J.C.; **Computer Generation of a Lake Data File From Landsat Digital Data, Environmental Assessment and Resource Management,** (at: Auto-Carto 5-5th Inter Symp on Comp-Ass't Carto & Inter Soc for Photo & Remote Sens Comm IV: Carto & Data Bank Appl of Photo & Remote Sens at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.449-458.

Abstract: A computer software system has been developed that manipulates Landsat digital data to compile a master file of lakes and their computer calculated surface features (i.e. areas, perimeter, crenulation and centroid). Although the system has worldwide capability in areas of flat terrain, it was conceived as a potential solution to inventory lakes and manage regional data for tens-of-thousands of uninventoried/ unenumerated Alaskan Arctic Coastal Plain Lakes. The latitude and longitude of each lake centroid uniquely identify each lake in the data files, providing for retrieval by user specified geographic area. The data files contain all system calculated surface features from Landsat data and space for additional data from other sources. Sorting and filtering functions applied through retrieval of these data provide a lake classification capability. Proposed uses of this system include: rapid lake inventory, change detection through repetitive inventory, consolidation of aquatic data, and supplementation or replacement of conventional means of regional lake data management and analysis.
Location: 01.

82.231
Moyseenko, Helmut; Yaramanoglu, Melih; Wanchoo, Lalit; **Utilizing Landsat Digital Data for Operating Two Hydrologic Models, Environmental Assessment and Resource Management,** (at: Auto-Carto 5-5th Inter Symp on Comp-Ass't Carto & Inter Soc for Photo & Remote Sens Comm IV: Carto & Data Bank Appl of Photo & Remote Sens at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.459-472.

Abstract: The suitability of using Landsat derived land use distributions in operating two hydrologic models is discussed. Subscenes from two Landsat scenes (April 1973 and August 1978) were classified and the areal percentages of six different land uses within the watershed calculated. The Landsat defined land uses included: grass or crops, forest, low density housing, bare soils or mining, medium density family housing, and highly impervious areas such as plazas and parking lots. These land use percentages were directly incorporated to each model's surface cover parameter set. The mathematical models used were: the University of Maryland version of the U.S. Department of Agriculture Hydrograph Laboratory Model of Watershed Hydrology (UOM USDAHL-74), a continuous simulation model, and the Distributed Parameter Model (DPM), a storm simulation model. The study area was the Northwest Branch of the Anacostia River Basin located in Maryland-a 21.1 square mile subwatershed. The two models very adequately simulated the peak discharge from the fourth largest flood recorded in history since 1933. Monthly runoff volumes calculated by USDAHL for the years 1975 through 1977 were generally higher than observed monthly runoff volumes for the same period. The correlation coefficient between observed and USDAHL calculated monthly runoff volumes was 0.85. No attempts were made to calibrate the two models by repetitive runs in order to better represent the existing hydrologic system. USDAHL and DPM are amenable to at least certain remote sensing inputs such as areal percentages of surface cover. The accuracy achieved appears commensurate with results normally obtained through conventional techniques for gathering data sets and then translating them into parameters for input to the models.
Location: 01.

82.232

Muller, James R.; O'Connor, R. Patrick; **Representing Topologic Properties in Raster Data Sturctures, Environmental Assessment and Resource Management**, (at: Auto-Cart 5-5th Inter Symp on Comp-Ass't Carto & Inter Soc for Photo & Remote Sens Comm IV: Carto & Data Bank Appl of Photo & Remote Sens at Crystal City, VA.) (American Society of Photogrammetry and American Congress on Surveying and Mapping) 1982 pp.473-482.

Abstract: A major obstacle to satisfying the need for digital cartographic data has been the high cost and long lead time associated with data capture of cartographic source material. Dramatic improvements in the rate of data capture and in the processing of cartographic data are promised by the emergence of raster technology within the digital mapping arena. A major deterrent to the acceptance of raster data has been the inability to interact with cartographic entities as features and segments. This interaction can be improved by a raster data structure which expresses basic topologic properties. This paper defines the topologic properties of raster data, presents an encoding scheme for representing neighborhood connectivity, and examines techniques for interpreting other properties from the data. Finally, an example illustrates the enhancement of cartographic editing through this procedure.

Location: 01.

82.233

Bickmore, D.P.; **Perspectives in the Alternative Cartography: Cartographic Computing Technology and its Application**, (in: Cartographica, Vol.19, no.2) 1982.

Abstract: Following the successful examples of AUTO-CARTO meetings in North America, European cartographers decided to stage EURO-CARTO I at Oxford, England in December, 1981. This volume is a collection of papers presented at the four-day meeting and others arising from the colloquium. The 22 invited papers are organized around the broader themes of computing technology, hydrology and computer mapping, vegetation mapping by computer, cartographic data bases and raster/vector technology, and miscellaneous subjects. Each session is introduced by an overview statement and closed by summary discussions, with a conference conclusion at the end.

Location: 01.

82.234

Kadmon, Naftali; **Cartograms and Topology**, (in: Cartographica, Vol.19, no.4) 1982 pp.1-17.

Abstract: Highly generalized cartograms which are not rigidly bound to the geometry of the globe can often supply effective graphic solutions to problematical thematic solutions, especially where non-metric object spaces are involved. While it is possible to reduce noise and to distribute information evenly over the map area, topological properties should be retained; some of these are described in this paper. In addition to uncontrolled cartograms, special distorting projections can now be employed in producing quantitative area cartograms.

Location: 01.

82.235

Taylor, D.R.F.; **The Cartographic Potential of Telidon**, (in: Cartographica, Vol.19, no.4) 1982 pp.18-30.

Abstract: Telidon is an advanced videotext developed by the Department of Communications and first released in 1978. This paper discusses the potential of Telidon as a means of displaying maps. Initial research with maps on Telidon has shown that there are two main problems: input to the system and design for the new medium. The paper discusses both issues. Map desgn research must concentrate on responding to the challenge of: 1. effective cartographic communication, and 2. design for television utilizing the alphageometric properties of Telidon. Research completed so far clearly demonstrates that although we can interface computer mapping programs with Telidon, it is not satisfactory to display existing digital maps without modification and, in some cases, total redesign. A number of specific subproblems such as color, text, animation and

sequencing are discussed. Telidon can be an important means of delivering geographic information in map form directly to Canadian homes.
Location: 01.

82.236
Done, P.; **The Adjustment of Single Control Traverses,** (in: The Australian Surveyor, Vol.31, no.4) 1982, December pp.235-242.
Abstract: Methods available for the adjustment of a closed traverse are discussed and their theoretical limitations are assessed. This is done in brief for these well-known methods: Least Squares, Bowditch (Compass), Transit and Crandall. Then the author presents the Smirnoff method, analyzing its theoretical basis and pointing out its comparative soundness. He includes a specimen computation.
Location: 01.

82.237
Van Twembeke, U.L.W.; **Photogrammetric Analytical Triangulation in Connection With Satellite Positioning,** (in: Bulletin Trimestriel de la Societe Belge de Photogrammetrie et de Teledetection,) 1982, December pp.3-32.
Abstract: The present paper investigates the procedure for obtaining geodetic coordinates from satellite observations as ground control and aerial triangulation as an extensive connection method. Because the measurements in photogrammetry take place in cartesian reference systems and the calculations are made by means of analytic geometry, it is logical that only rectangular reference systems are considered in the object space.
Location: 01.

82.238
North Slope Borough Embarks on Massive Computer Mapping Project Arctic Policy Review, pp.sdf.

82.239
Samet, Hanan; **Neighbor-Finding Technique for Images Represented by Quadtrees,** (in: Computer graphics and image processing, Vol.18, no.1) 1982.

82.240
Stelner, Dieter; Flury, Benedetto; Gilgen, Hans; Ilg, Markus; **Interactive Choropleth Mapping on a Raster-Orientated Color Display,** (Berichte und Skripten) 1982.
Abstract: This paper discusses some basic considerations for the establishment of a computer-assisted interactive and raster-based choropleth mapping system, in particular with respect to a color display unit with refresh memory, a video lookup table and a CRT monitor. A tabular relational model serves as a framework within which tasks and problems can be described, structured and evaluated. The model is introduced in Section 2. In Section 3 it is shown how it can serve as a design tool to derive and evaluate alternative mapping strategies. Section 4 discusses some implementation aspects in the context of a color display system. Section 5 addresses the special problem of composing suitable color scales by interactive means. Finally, some desirable components of an interactive legend facility are listed in Section 6 together with the use of the relational model to demonstrate how related problems can be solved.

82.241
Meier, Andreas; Ilg, Markus; **Consistent Operations on a Spatial Data Structure,** (Berichte und Skripten) 1982.
Abstract: Practical algorithms for handling geographic data in such a way that consistency is preserved are presented. Geometrical objects such as polygons, line segments, and points may have manyfold relations among each other (i.e., order, adjacency, connectivity, etc.) and can be represented in a uniform spatial data structure. This representation allows a set of interesting queries to be answered and poses some manipulation problems. A graph-relational model is

proposed for the design of consistent states and manipulations upon a geographic data base. The manipulation rules (productions) require that coincidence problems as well as topological properties are dealt with. Moreover, this approach allows for the study. of the synchronization of several concurrent productions. For the sake of illustration, a small geographic data base has been implemented using the PASCAL/R-system installed at the ETH Zurich. PASCAL/R includes a data type "relation" and a first order calculus for relational expressions.

82.242
Marble, Duane F.; Peuquet, Donna J.; **Geographic Information Systems and Remote Sensing, Manual of Remote Sensing,** (American Society of Photogrammetry) 1982.

82.243
Beanlands, Gordon E.; Duinker, Peter N.; Dalhousie University. **Draft Summary of the Report Entitled Environmental Impact Assessment in Canada: An Ecological Perspective,** (Institute for Resource and Environmental Studies) 1982.

82.244
Holdgate, Martin W.; **The Environmental Information Needs of the Decision-maker,** (in: Nature and Resources, Vol.XVIII, no.1) 1982, January-March pp.5-10.

82.245
Dyer, C.R.; **Space Efficiency of Quad Trees,** (in: Computer Graphics and Image Processing, Vol.19,) 1982 pp.335-348.

82.246
Gargantine, I.; Tabakman, Z.; **Linear Quad- and Oct-trees: Their Use in Generating Simple Algorithmns for Image Processing,** (in: Graphics Interface,) 1982 pp.123-127.

82.247
Gargantine, I.; **Linear Oct-trees for Fast Computer Processing for Three Dimensional Objects,** (in: Computer Graphics and Image Processing, Vol.20, no.4) 1982, December pp.365-374.

82.248
Li, M.; Grosky, W.I.; Jain, R.; **Normalized Quad-trees with Respect to Translations,** (in: Computer Graphics and Image Processing, Vol.20,) 1982 pp.72-81.

82.249
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> **Abstract:** "The primary purpose of Picasso is to display two and three dimensional data fields which have been obtained from computer simulation programs or laboratory physical scale model runs. Picasso is a flexible, interactive program which reads in data, performs interpolations, and calls selected graphics routines to produce the desired plots."

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Abstract: The purpose of this manual is to provide an insight into the system employed by the Provincial Planning Branch in the organization, manipulation and processing of data for land use and regional planning studies. After consideration of the quantity and quality of the available data, it was decided to construct a data bank comprised of physical, social, land use and economic data, using the quarter section as the unit of input. In order to maintain consistency in the method of data handling, the Provincial Planning Branch has found it necessary to prepare a detailed description of this phase. The data sets included in the main body of the manual are those which have provincial application. As individual studies uncover new or region specific sets of data, these will be included as appendices. The format for these appendices is established in Appendix A - Hinton-Yellowhead Regional Land Use Study which is the first of these regional project additions to the manual.

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McNabb, Grant H.; **Land-Related Information Systems (LRIS) at the City of Calgary**, (at: Seminar on Land-Related Information Systems: Municipal/Provincial Integration) (Ontario Ministry of Natural Resources) 1982 pp.121-141.

Abstract: At the City of Calgary, the Land-related Information Systems development is based on the idea that pictorial data stored on a computer assisted mapping system should be linked, without manual intervention, to the data in the existing operational computer systems. An overview of the operational systems, the Computer Assisted Mapping System, and the linkage accomplished by the Geographic Referencing System is given. Successful applications and the innovations in programming that made these applications possible are described.

82.301

Huxhold, William E.; Allen, Richard K.; Gschwind, Randolf A.; **An Evaluation of The City of Milwaukee Automated Geographic Information and Cartographic System in Retrospect**, (at: Seminar on Land-Related Information Systems: Municipal/Provincial Integration) (Ontario Ministry of Natural Resources) 1982 pp.67-94.

Abstract: In July 1978, a paper was presented at the Harvard Conference by the City of Milwaukee which described the results of a seven-month demonstration of computer graphics and presented plans for the development of a parcel-based mapping system for the planning and public works functions of the city.

Now, after four and a half years of operation, the data base is nearing completion, the system is being used for a variety of applications, and valuable experience has been gained about the implementation of computer graphics in a public agency. These years of experience provide the opportunity to evaluate the development and operation of this new technology as well as to evaluate the ability of its project implementors to plan for its introductin to the city.

This paper describes the current status of the Milwaukee computer graphics project and compares that status to the original plan which was developed in 1975. In addition, this retrospective view evaluates successes, failures, delays, cost overruns, and user attitudes to provide a basis for the recommendations highlighted in the body of the text. These "bits of advice" are lessons learned from frustrations, hard knocks, and accomplishments through the experience of a seven-year project at the City of Milwaukee.

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McLaughlin, John; Masry, Salem E.; **The Development of Multipurpose Land Information Systems: A Canadian Perspective**, (in: Journal of the Surveying and Mapping Division, A.S.C.E., Vol.108,) 1982 pp.1-9.
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Marshall, I.B.; **Mining, Land Uses, and the Environment: A Canadian Overview**, 1982.
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Petch, Arthur; Mocenko, Sandy; **An Inventory of Federally Maintained Land Data**, (Environment Canada) 1982.
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Canada. Department of the Environment. Lands Directorate. **Inventory of Federally Maintained Land Data**, (Department of the Environment, Lands Directorate) 1982.
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Location: 20.

82.322

Peuquet, Donna J.; **Vector/Raster Options for Digital Cartographic Data, The Design & Implementation of Computer-based Geographic Information Systems,** (at: U.S./Australia Workshop held under the joint sponsorship of the U.S. Nat'l Science Fdn. & the Australian Dept. of Science & Technology) (Commission on Geographical Data Sensing & Processing) 1982.
Location: 20.

82.323

Samet, Hanan; **Hierarchical Data Structures for Representing Geographical Information, The Design & Implementation of Computer-based Geographic Information Systems,** (at: U.S./Australia Workshop held under the joint sponsorship of the U.S. Nat'l Science Fdn. & the Australian Dept. of Science & Technology) (Commission on Geographical Data Sensing & Processing) 1982.
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82.324

Zobrist, Albert L.; **Integration of LANDSAT Image Data With Geographic Data Bases, The Design & Implementation of Computer-based Geographic Information Systems,** (at: U.S./Australia Workshop held under the joint sponsorship of the U.S. Nat'l Science Fdn. & the Australian Dept. of Science & Technology) (Commission on Geographical Data Sensing & Processing) 1982.
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Dangermond, Jack P.; **A Classification of Software Components Commonly Used in Geographic Information Systems, The Design & Implementation of Computer-based Geographic Information Systems,** (at: U.S./Australia Workshop held under the joint sponsorship of the U.S. Nat'l Science Fdn. & the Australian Dept. of Science & Technology) (Commission on Geographical Data Sensing & Processing) 1982.
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Calkins, Hugh W.; **A Pragmatic Approach to Geographic Information System Design, The Design & Implementation of Computer-based Geographic Information Systems,** (at: U.S./Australia Workshop held under the joint sponsorship of the U.S. Nat'l Science Fdn. & the Australian Dept. of Science & Technology) (Commission on Geographical Data Sensing & Processing) 1982.
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83.001

McCormick, D.D.; **The Concept of Map Information as a Malleable, User-Oriented Commodity**, (in: New Zealand Cartographic Journal, Vol.12, no.2) 1983, February pp.18-20.

Abstract: The greatest challenge facing traditional cartography today is the need to conceptualize and design the new products which can be realized as a result of the digital revolution. Computer-assisted cartography must be more than the faster production of traditional maps. The author lists ten important developments and axioms in digital cartography which should point the way to new approaches to map making and marketing of map information. Public demand for information of all sorts will force cartographers to reassess their relationships with map users and the whole nature of their cartographic production philosophy.

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83.002

Dermanis, A.; Vlachos, D.; **Problems and Alternatives in Control Network Adjustment**, (in: Quaterniones Geodaesiae, Vol.4, no.1) 1983 pp.1-33.

Abstract: A general review of problems related to the adjustment of control networks is given. After a discussion of the relation between the two well known techniques of Observation and Condition Equations, emphasis is given to the case of Observation Equations with coordinates as parameters. The role of the definition of the reference frame in the adjustment is clarified in connection with the use of minimal or superfluous constraints. The notion of free networks and the related inner constraints is also explained. Special attention is paid to the problem of incorporating a new network into an already existing one of higher order.

83.003

National Technical Information Service. **Computer Aided Mapping**, (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning applications of computer techniques to cartography. Automatic mapping, geographic data bases, and computerized photomapping are included. (This updated bibliography contains 140 citations, all of which are new entries to the previous edition.)

83.004

National Technical Information Service. **Computer Aided Mapping**, (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning applications of computer techniques to cartography. Automatic mapping, geographic data bases, and computerized photomapping are included. (This updated bibliography contains 336 citations, none of which are new entries to the previous edition.)

83.005

Schowengerdt, R.; Arizona Univ.. **Landsat-4 Thematic Mapper Modulation Transfer Function (MTF) Evaluation**, (National Aeronautics and Space Administration) 1983.

Abstract: A power spectrum (PS) analysis technique was used to compare thematic mapper (TM) A and P-tape data for a Washington, DC scene in two orthogonal directions, along scan and along track. The resulting effective modulation transfer functions (MTF) between the A and P data are repeatable from area to area and consistent with theoretical expectations. The average x-direction (along scan) MTF calculated with the PS technique is compared to the MTF of the cubic convolution resampling function used to create P data from A data. The two curves are nearly identical, indicating that the major factor affecting the image quality of P data relative to A data is the cubic convolution resampling.

83.006

Bundy, T.R.; **Hexagonal Data Base Study,** (Interactive Systems Corp.) 1983.

Abstract: This is a final report for a study in the application of hexagonal data structures to handling geographic information. This report presents the results of an experimental software implementation utilizing hexagonal data structures as applied to test data base. (Author)

83.007

Samet, Hanan; Rosenfeld, Azriel; Maryland University, Computer Vision Lab.. **Application of Hierarchical Data Structures to Geographical Information Systems,** (Army Engineer Topographic Labs.) 1983.

Abstract: The purposes of this investigation were twofold: (1) to construct a geographic information system based on the quadtree hierarchical data structure, and (2) to gather statistics to allow the evaluation of the usefulness of this approach to geographic information system organization. To accomplish the above objectives, in Phase I of the project a database was built that contained three maps supplied under the terms of the contract. These maps described the flood plain, elevation contours, and language classes of a region in California. The map regions were represented in quadtree form, and algorithms were developed for basic operations on quadtree-represented regions (set-theoretic operations, point-in-region determination, region property computation, and submap generation). The efficiency of these algorithms was studied theoretically and experimentally. On Phase II of the project, the following additional tasks were performed: (a) Query Language Design; (b) Database updating; (c) Point and linear feature data construction.

83.008

Ford, G.E.; California University Department of Electrical and Computer Engineering. **Landsat-D Thematic Mapper Image Dimensionality Reduction and Geometric Correction Accuracy,** (National Aeronautics and Space Administration) 1983.

Abstract: When principle component analysis of a subscene of a section of the Sacramento River showed lower correlation among the TM spectral components that were observed for the MSS spectral components, principle component analysis was applied to a LANDSAT 2 MSS subscene of the same area for comparison purposes. Correlation coefficient matrices indicate the pairwise similarity and correlation of the data for the spectral components. The principle components transformation matrix, indicates the weights applied to the original components to generate the transformed components. The first two TM components can be described as visible and near infrared. For the MSS data, the first transformed component is roughly the average of the four original components. The second transformed component is roughly the difference between the visible and infrared components. Tables show that 97.0% of the variance in an MSS image is contained in only two transformed components.

83.009

Karow, K.; Sonicraft, Inc.. **Advanced Edit System,** (Army Engineer Topographic Labs.) 1983.

Abstract: An advanced edit system with high resolution interactive graphic workstations and support software for editing digital cartographic and mapping data was developed to be used by Defense Mapping Agency Aerospace Centre. The hardware consists of PDP-11/70 computer with two Intergraph Corp. dual screen workstations; one has vector storage tubes; the other workstation has a raster color display with 1024 by 1024 pixels. Conversion software programs were developed to convert AGDS Scan Data, CRT Printhead data, Gerber plot data, DLMS Culture and Terrain data and RAPS data (various cartographic data base and plotter data instructions) into the Intergraph design file data format for display and editing. Additional programs convert the design file data back to the various data bases or plotter instructions. Numerous interactive graphic manipulation commands are provided as a starting point for developing special commands to move, delete, and, or copy features in a design file. (Author)

83.010

National Technical Information Service. **Photogrammetry: Equipment and Image Processing. 1975-November, 1983 (Citations from the International Information Service for the Physics and Engineering Communities Data Base)**, (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning aerial and satellite photogrammetric equipment and image processing methods and technology. Image correlation techniques are considered according to photogrammetric and mathematical fundamentals as well as the techniques for video-conversion, correlation, and rectification of video signals. Data processing system programs for the acquisition, storage, and processing of cartographic data obtained photographically are also considered. (This updated bibliography contains 148 citations, 13 of which are new entries to the previous edition.)

83.011

Royal Society. **Remote Sensing and Digital Mapping: Submission by the Royal Society to the House of Lords Select Committee on Science and Technology**, (Royal Society) 1983.

Abstract: The past two decades have seen rapid advances in technology which have substantially enhanced the availability and usefulness of both new kinds and much greater quantities of information about the surface of the Earth and its natural and man-made cover. Among the key technologies are remote sensing from satellites and digital data processing (notably digital cartography) which are discussed at length in this report.

83.012

Tucker, C.J.; Townshend, J.R.G.; Goff, T.E.; **Continental Land Cover Classification Using Meteorological Satellite Data**, (National Aeronautics and Space Administration, Goddard Space Flight Center) 1983.

Abstract: The use of the National Oceanic and Atmospheric Administration's advanced very high resolution radiometer satellite data for classifying land cover and monitoring of vegetation dynamics over an extremely large area is demonstrated for the continent of Africa. Data from 17 imaging periods of 21 consecutive days each were composited by a technique sensitive to the in situ green-leaf biomass to provide cloud-free imagery for the whole continent. Virtually, cloud-free images were obtainable even for equatorial areas. Seasonal variation in the density and extent of green leaf vegetation corresponded to the patterns of rainfall associated with the inter-tropical convergence zone. Regional variation, such as the 1982 drought in east Africa, were also observed. Integration of the weekly satellite data with respect to time produced a remotely sensed assessment of biological activity based upon density and duration of green-leaf biomass. Two of the 21-day composited data sets were used to produce a general land cover classification. The resultant land cover distributions correspond well to those of existing maps.

83.013

Kazmierczak, H.; Sties, M.; Lubkowitz, R.; Bohner, M.; **Coincident Extraction of Line Objects from Stereo Image Pairs,** (Forschungsinstitut fuer Informationsverarbeitung) 1983.

Abstract: A procedure for the automatic extraction of line objects from stereo pairs of aerial images (e.g., objects as roads, rivers, railroads and multiland highways) has been developed and implemented on a DEC VAX 11/780 computer. The procedure and its main functions are described in summary and in detail. A detailed documentation of the various test results is included as well as assessment and conclusions.

83.014

Snider, M.A.; Levenson, J.B.; Argonne National Laboratory, Argonne IL., **CEREAS: A Computerized Mapping System for Environmental Reviews,** (at: Harvard Computer Graphics Conference at Cambridge, MA) (Department of Energy) 1983.

Abstract: The overthrust belt of the Rocky Mountain states has recently been the focus of intense oil and natural gas exploration and development. Exploration and drilling activities occur largely on leased federal lands, where the federal surface management agencies are responsible for determining potential environmental impacts. CEREAS was developed to provide environmental scientists immediate access to computer-drawn maps indicating potential constraint areas in relation to proposed activity sites. The environmental scientist specifies the activity site coordinates, map scale and data theme. The system retrieves the data surrounding the proposed activity site and spatially portrays the data on an online or offline graphics device. The CEREAS system comprises three basic parts - a generalized mapping system, a system of map data bases, and an input command processor. The generalized mapping system is a general-purpose program that performs basic mapping functions necessary to draw maps from digitized spatial data. The data base system contains spatial environmental data for areas of intense oil and gas activities. The command processor provides an interface among the operator of the system, the mapping program, and the data bases. (ERA citation 08:049866)

83.015

Malila, W.A.; Metzler, M.D.; Crist, E.P.; Environmental Research Inst. of Michigan, Infrared and Optics Div., **Study on Spectral/Radiometric Characteristics of the Thematic Mapper for Land Use Applications,** (National Aeronautics and Space Administration) 1983.

Abstract: Previous characterization of scan-related low-frequency noise was extended and refined through detailed analysis of shutter calibration data on CCT-ADDS tapes and reflective-band data from nighttime acquisitions. A recommended correction procedure was identified that uses calibration shutter data both as a diagnostic and to obtain correction values. Through comparison of coincident TM and MSS data, illustrations of the added information content of TM data for agricultural applications were developed. The capability of improved spatial resolution to better define boundaries and to resolve spatial details is shown, spectral analysis of tasseled-cap transformations of TM and MSS data shows high correlation between greenness features, greater signal range for TM, and indications that a subset of TM bands could accurately simulate MSS data, if required.

83.016

Edelen, Robert B.; **Future in Terrain Elevation Data Processing at the Defense Mapping Agency,** (at: International Automated Cartography Symposium (6th)) (Defense Mapping Agency;) 1983.

Abstract: Since 1968 the Defense Mapping Agency (DMA) has been actively engaged in the production of Digital Terrain Elevation Data; initially to support plastic relief mapping, then to support lines of site studies, and more recently to support advances weapons systems, simulators and navigational devices. With the increasing variety of users for Digital Terrain Elevation Data (DTED), the requirement for greated quantity, accuracy and diversity of DTED has likewise increased. To help meet these challenging production requirements of the future, DMA has awarded a major contract for development of the Terrain Edit System/Elevation Matrix Processing System (TES/EMPS). The TES/EMPS will provide state-of-the-art minicomputers, array processors and specially developed software to perform complex data transformation, interpolation, merging, and discrepancy detection functions. The TES/EMPS work stations, combined with mini computers and graphics processors, will provide advanced graphic displays and editing capabilities to perform interactive error correction, panelling and validation function. All work flow through the system will be managed by the sophisticated job and file management software. The TES/EMPS will be installed at DMA in December 1983 and will perform all processing of DTED collected for photographic and cartographic sources.

83.017

Borgefors, G.; Foersvarets Forskningsanstalt. **Matching Edges in Maps and Aerial Images Using the Chamfer Matching Algorithm**, (National Aeronautics and Space Administration) 1983.

Abstract: The purpose of matching edges is to find the same geographical features in two different images. An algorithm for matching edges called chamfer matching is investigated. The possible applications for this algorithm are, among others, navigation, presentation of multisensor data and precision rectification. Chamfer matching is a fine matching method, which can be used when the position of the edge searched for is roughly known. Both translation and rotation of the edge are considered. The computational examples show the chamfer matching works quite well in may realistic situations.

83.018

National Aeronautics and Space Administration. **Formulas for Precise Transverse Mercator Projection: A New Method Yields Precise Geodetic Maps**, (National Aeronautics and Space Administration) 1983.

Abstract: This citation summarizes a one-page announcement of technology available for utilization. A new method for producing geodetic maps is not only easier to use than older methods but is also more precise. The new technique is a simplified method for computing the transveres Mercator projection, points on the surface of Earth are projected conformally onto a cylinder that is tangent at a principle meridian (including both poles). The cylinder then cut and flattened to form a planar map. The new method makes use of a set of formulas that connect coordinates of points of an oblate-spheroid-shaped Earth to rectangular map coordinates. The formulas are a new generalization of the previously known formulas for a spherical Earth. The formulas are in the form of conjugate harmonic series in odd powers of the spheroidal latitudinal eigenfuncation and odd harmonics of the sine and cosine of the longitude. Tables of the calculus of the spheroidal latitudinal eignefuncation and related functions, and power series for these functions have been developed. Besides their use in mapmaking, the functions can be applied to the design of streamlined structures - for example, when distance along an ellipsoidal surface requires a simple analytic expression. ...FOR ADDITIONAL INFORMATION: Contact: Tech. Transfer Div., P.O. Box 8757, BWI Airport, MD 21240; (301) 621-0100. Refer to: NPO-15409/TN.

83.019

Fischler, Martin A.; **Computer Vision Research and Its Applications to Automated Cartography**, (SRI International) 1983.

Abstract: The principle objective in this research program is to obtain solutions to fundamental problems in computer vision; particularly those problems that are relevant to the development of an automated capability for interpreting aerial imagery and the production of cartographic products. Our plan is to advance the state of the art in selected core areas such as stereo compilation, feature extraction linear delineation, and image matching; also to develop an expert system control structure which will allow a human operator to communicate with the computer at a problem orientated level, and guide the behavior of the low level interpretation algorithims doing detailed image analysis. Finally, we plan to use the DARPA/DMA Testbed as mechanism for transporting both our own and IU community advances, in image interpretation and scene analysis, to DMA, ETL, and other members of the user community.

83.020

Green, F.C.; **Status of Auto Carto at the Defense Mapping Agency,** (Defense Mapping Agency) 1983.

Abstract: During the last year, DMA has focused on increased utilization of auto carto techniques and processes in production. Although significant auto carto capabilities have existed in the past, a combination of a balancing of production emphasis and software development is now providing increased automation in map and chart production. Discussed are developments in exploiting digital product data for maps and charts and the family of products concept. Applications of scale conversion through digital processes using existing repromat source for smaller scale maps are reviewed. New applications of auto carto scheduled for integration into production in the near future are also discussed. (Author)

83.021

Brass, J.A.; Likens, W.C.; Thornhill, R.R.; **Wildland Inventory and Resource Modeling for Douglas and Carson City Counties, Nevada, Using Landsat and Digital Terrain Data,** (National Aeronautics and Space Administration) 1983.

Abstract: The potential of using LANDSAT satellite imagery to map and inventory pinyon-juniper desert forest types in Douglas and Carson City Counties, Nevada was demonstrated. Specific map and statistical products produced include land cover, mechanical operations capability, big game winter range habitat, fire hazard, and forest harvestability. The Nevada Division of Forestry determined that LANDSAT can produce a reliable and low-cost resource data. Added benefits become apparent when the data are linked to a geographical information system (GIS) containing existing ownership, planning, elevation, slope, and aspect information.

83.022

Gustin, Russell T.; **Polygon Filling Algorithms,** (Defense Mapping Agency Aerospace Center) 1983.

Abstract: The Defense Mapping Agency is responsible for the production of Digital Terrain Matrix (DTM) data in support of advanced weapons systems and digital simulation technology. This paper provides a brief historical sketch of the methods used in processing water areas within the DTMs, an evaluation of raster graphics technology with respect to processing these water areas, and the subsequent enhancements made to the DTM processing software based upon that evaluation. (Author)

83.023

Gallauresi, David R.; Muller, James R.; O'Connor, R. Patrick; Kolassa, David A.; Synectics Corp.. **Interactive Raster Data Structure Study,** (Rome Air Development Center) 1983.

Abstract: This report describes a study conducted to define current capabilities for interactive processing of raster structured cartographic data and to identify potential techniques for future enhancement of those capabilities. Past raster processing development activities are summarized and current concepts are described. Data structures are recommended to increase computational efficiency of various cartographic functions associated with the production and exploitation of topological data. A system hardware and software concept is suggested to support future requirement for a complete raster compilation and revision capability. (Author)

83.024

Lehnert, Wendy G.; Shwartz, Steven P.; **EXPLORER: A Natural Language Processing System for Oil Exploration,** (at: Conference on Applied Natural Language Processing at Santa Monica, California) (Massachusetts University) 1983.

Abstract: EXPLORER (Lehnert and Shwartz, 1982; Shwartz 1982) is a non-fragile, 'hands on' language analysis system that allows oil explorationists with no knowledge of computers or computer programming to create customized maps. Users in Tulsa, Denver, and New Orleans currently have dial-up access to a DEC-20 where EXPLORER is implemented in TLISP. A user converses with EXPLORER about a desired map until both parties have agreed on an adequate and unambiguous set of specifications. Another phone link then carries EXPLORER's output to an IBM 3033 which runs database retrieval routines on commercial well data. When all the information has been secured from well data, a graphics system takes over to perform the actual map generation. EXPLORER is currently undergoing evaluation, and it is targetted for a 1983 installation in all regional offices of a major oil company for restricted use by geologists and geophysicists.

83.025

Leitz, John C.; Cambier, James L.; Crone, Michael S.; Fries, Robert; Gennert, Michael A.; PAR Technology Corporation. **Automatic Feature Extraction System No. 2,** (Rome Air Development Center) 1983.

Abstract: This report documents the development of the Automatic Feature Extraction System delivered to the Defense Mapping Agency. This effort has provided an advanced development model of a semi-automatic interactive system capable of generating data files to support mapping, charting and geodesy products from digital source inputs and a flexible test bed to permit experimentation for addressing the long range image processing requirements of the Defense Mapping Agency. (Author)

83.026

Shelberg, Mark C.; Lam, Nina; Moellering, Harold; **Measuring the Fractal Dimensions of Surfaces,** (Defense Mapping Agency Aerospace Center) 1983.

Abstract: The fractal dimension of a surface is a measure of its geometric complexity and can take on any non-integer value between 2 and 3. Normally, the topological dimension of surfaces is 2; however, their fractal dimensions increase with greater amounts of complexity or roughness. For example, a fractal dimension of 2.3 is found to be a common value in describing the relief on the earth. This paper discusses and presents examples of an algorithm designed to measure the fracticality of surfaces. The algorithm was developed at The Ohio State University and is shown to be reliable and robust. It is placed in an interactive setting and is based on the premise that the complexity of isarithm lines may be used to approximate the complexity of a surface. The algorithm operates with the following scenario: Starting with a matrix of Z-heights, an isarithm interval is selected and isarithm lines are constructed on the surface. A fractal dimension is computed for each isarithm lines by calculating their lengths over a number of sampling intervals. The surface's fractal dimension is the result of averaging the fractal dimensions of all the isarithm lines and adding 1. Potential applications for this technique include a new means for data compression, a quantitative measure of surface roughness, and be used for generalization and filtering.

83.027

Taylor, Cyrus C.; Norton, Steven W.; **Information-Theoretic Surface Modeling**, (at: ACSM-ASP Convention at Washington DC) (Army Engineer Topographic Labs) 1983.

Abstract: The problem of estimating the form of a surface, given a set of points lying on that surfce, is a fundamental concern in automated cartography. A good deal of effort has been spent investigating the problem by using particular terrain modeling schemes, but no general approach has previously been developed. In this paper, we examine the problem of terrain estimation from an information-theoretic viewpoint. Geometric analysis shows that there is an essentially unique criterion for the optimal choice of an estimated terrain surface given limited knowledge of that surface. We briefly review this theory, and then turn to the practical question of developing versatile and efficient software for manipulating terrain elevation data based on the information-theoretic analysis. The contour to grid estimation system CONTOGES was implemented at the U.S. Army Engineer Topographic Laboratories (USAETL) as a preliminary check of the theoretical work. We discuss the particular algorithm and the results of a test of the software system.

83.028

Beyer, E.P.; General Electric Co., **An Overview of the Thematic Mapper Geometric Correction System**, (National Aeronautics and Space Administration) 1983.

Abstract: Geometric accuracy specifications for LANDSAT 4 are reviewed and the processing concepts which form the basis of NASA's thematic mapper geometric correction system are summarized for both the flight and ground segments. The flight segment includes the thematic mapper instrument, attitude measurement devices, attitude control, and ephemeris processing. For geometric correction the ground segment uses mirror scan correction data, payload correction data, and control point information to determine where TM detector samples fall on output map projection systems. Then the raw imagery is reformatted and resampled to produce image samples on a selected output projection grid system.

83.029

United States. Department of the Army. **Cartographers Examining Automated Methods of Map Generalization and Displacement**, (Department of Army) 1983.

Abstract: This citation summarizes a one-page announcement of technology available for utilization. Studies into the realm of the subjective cartographic processes by researchers provides needed information for the development of an intelligent digital cartographic system. Cartographic license, the freedom to adjust, add, or omit map features within allowable limits, mean that the appearance of a map is dependent upon the cartographer who produces it. Researchers are studying two subjectve aspects of map production that fall in the domain of 'cartographic license': line generalization and feature displacement. A three-phase effort to address the subjective aspect of map production has begun. A series of technical reports will be generated for each task in the study phase. ...FOR ADDITIONAL INFORMATION: Contact: Mr. Douglas Caldwell, US Army Engineer Topographic Laboratories, ETL-TD-MA, Fort Belvoir, VA, 22060; (703)664-3722.

83.030

Brown, Robert M.; Cheng, C.F.; **Optical Character Recognition for Automated Cartography: The Advanced Development Handprinted Symbol Recognition System**, (Naval Ocean Research and Deveopment Activity) 1983.

Abstract: This NORDA Technical Note is composed of five chapters. The first chapter presents an overview of optical character recognition (OCR) and its relation to the automated cartogarphy environment. It provides the DMA Subtask objectives and discusses them in the light of symbol digitizing and information transformations. The division of a total OCR system into data acquisition/document management and isolated character recognition is considered along with NORDA's recent tasking (FY-82) prototype for DMA production centers. Chapter Two presents a discussion of the different ways in which recognitin systems are constructed. In particular, it considers the differences in approach necssary for constrained and free-form OCR. Chapter Three describes the DMA environment in which a handprinted OCR system must operate and discusses performance requirements. The general structure of the Handprinted Symbol Recognition System is outlined in Chapter Four. This material considers the key issues of information content, problems in the thinning or vectorization of a character, shape measurement and feature extraction, and finally character recognition or labeling. The interaction between each of these elements is emphasized. Chapter Five provides a brief summary of the current Subtask accomplishments and status along with areas where work is in progress toward developing other handprinted OCR capabilities for DMA.

83.031

B.C. Ministry of Forests. **B.C. Soil Information System**, (B.C. Ministry of Forests) 1983.
Location: 32.

83.032

Barnes, Allen E.; Gough, Ed C.; Brown, Robert M.; Zied, Al; Planning Systems Inc.. **Advanced Type Placement and Geonames Database: Comprehensive Coordination Plan**, (Naval Ocean Research and Development Activity) 1983.

Abstract: This paper presents a preliminary comprehensive coordination plan for the technical development and integration of an automated names database capture and management of an overall automated cartographic system, for the Defense Mapping Agency. It broadly covers the technical issues associated with system and associated subsystems functional requirements, inter-subsystem interaction common technologies in hardware, software, database, and artificial intelligence. The 3-phase R&D cycles for each and all subsystems are also outlined.

83.033

National Research Council, Washington DC. **Procedures and Standards for a Multipurpose Cadastre**, (National Oceanic & Atmospheric Admin, Rockville MD) 1983.

Abstract: This report provides guidance to local officials who seek to establish elements of a multipurpose cadastre in their jurisdictions and to the state and federal agencies that seek to assist in this effort. The objectives are as follows: (1) to provide scriptions of public systems for cadastral products and services that can be permanent and cost-effective in the United States, and references to sources of detailed specifications for development of components of these systems; (2) to encourage commitments by state and local governments to the development of multipurpose cadastres to serve their respective areas but without attempting to prescribe their administrative organization, which will need to be adapted to the existing governmental structure in each locality; (3) to suggest guidelines for federal and federally supported programs that can have an important impact on the development of multipurpose cadastres; and (4) to encourage the adoption of compatible standards and procedures for the components of a multipurpose cadastre and related records.

83.034

Hogan, Ron; **The Computer Age in Surveying Evolution**, (in: Professional Surveyor, Vol.3, no.1) 1983, Jan-Feb pp.6-10.

Abstract: The article advertises the author's production of computer-controlled equipment for creating engineering and cadastral plans from a digitized photogrammetric data base augmented by total station ground surveys. (He decided to digitize the photographs because he didn't trust photogrammetric maps.) He claims that his system enables one to create graphically any precise coordinate geometry as fast as one can sketch.

83.035

Orhaug, T.; Olander, N.; Carlsson, E.; **Landsat 4 TM-Data: Examples of Resolution Capacity (Landsat 4 TM-Data: Exempel pa Upploesningsfoermaga)**, (Foersvarets Forskningsanstalt) 1983.

Abstract: Landsat-4, successfully launched on July 16, 1982, has now started its operation. The new Thematic Mapper (TM) sensor is of special interest. Spectral, spatial and radio-metric resolution is improved as compared to previous Landsat sensors (Multispectral Scanner (MSS) and Return Beam Vidicon (RBV)). This report describes the satellite and the TM-sensor. Coarse examinations of the spatial resolution have been made, using two of the first scenes obtained with the new TM-sensor. The new sensor seems to work well and the preliminary results are very encouraging. Some of the pictures presented in this report were originally color pictures (as indicated in figure captions). Due to cost, the report is printed in black and white. A limited number of copies of the report has, however, been distributed with color-prints mounted.

83.036

Sgouros, T.A.; Keffer, T.; Woods Hole Oceanographic Institution. **CAMS (Center for the Analysis of Marine Systems) Interactive Atlas Package: A Computerized Program for the Archiving and Presentation of Oceanographic Data**, (Mobil Foundation, Inc.) 1983.

Abstract: The CAMS Interactive Atlas Package allows a user to computer contour any hydrographic quantity on any isosurface in any global projection. It consists of two parts: a large, and growing, data base which can be easily supplemented with user-supplied data, and a set of computer software routines that manage the data, interpolate onto the isosurface, and draw the maps.

83.037

Lockheed Engineering and Management Services Co., Inc.. **Effects of Decreasing Resolution on Spectral and Spatial Information Content in an Agricultural Area**, (National Aeronautics and Space Administration, Usda, Dept. Of Commerce, Dept. Of the Interior, and Agency for International Development. Erts.) 1983.

Abstract: The effects of decreasing spatial resolution from 6 1/4 miles square to 50 miles square are described. The effects of increases in cell size is studied on; the mean and variance of spectral data; spatial trends; and vegetative index numbers. Information content changes on cadastral, vegetal, soil, water and physiographic information are summarized.

83.038

Strewig, Larry; Ruys, Joseph P.; Schneider, Jan S.; **Automated Standard Nautical Chart Production**, (Defense Mapping Agency Hydrographic/Topographic Center) 1983.

Abstract: In September of 1982, the Defense Mapping Agency Hydrographic/Topographic Center printed and released to the public a Standard Nautical Chart which was compiled, symbolized, and color separated using computer technology. The production of this chart involved several different computer driven mapping systems, as well as a unique mix of cartographers and computer specialists. This report describes the methodology, techniques, and computer systems used to produce the chart. (Author)

83.039

National Aeronautics and Space Administration. **Earth Resources: A Continuing Bibliography with Indexes**, (National Aeronautics and Space Administration) 1983.

Abstract: This bibliography lists 623 reports, articles, and other documents introduced into the NASA scientific and technical information system between April 1 and June 30, 1983. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis.

83.040

National Technical Information Service. **Side Looking Radar. 1970-August, 1983 (Citations from the NTIS Data Base)**, (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning the use of side looking radar as it applies to geological surveys, ice drift, and natural resource mapping. Special emphasis is placed on the use of satellites for mapping of remote areas. The design and operation of side looking radar are discussed and include signal processing, pattern recognition, antennas, maintenance, and calibration. (This updated bibliography contains 211 citations, 17 of which are new entries to the previous edition.)

83.041

Bryant, Nevin A.; Zobrist, Albert L.; Jet Propulsion Laboratory, Pasadena, CA.. **Evaluation of Landsat-4 TM and MSS Ground Geometry Performance Without Ground Control**, (National Aeronautics and Space Administration, Erts.) 1983 .

Abstract: Techniques and software developed to characterize the Washington, D.C. scene were improved and are being systematically applied to an Imperial Valley, CA scene. Digital elevation files are being acquired. One hundred seventy-two tiepoints were located in the Imperial Valley scene. They were digitized from USGS maps to determine their lat-long coordinates. A least squares fit is currently being performed between line-sample image data and the lat-long positions of the tiepoints. Thematic mapper scanner sweeps were determined for the Imperial Valley P-data. VICAR jobs are currently under way to analyze sample-direction offsets between sweeps in the data, as well as band to band registration offsets. Tiepoint location is about to begin in the Harrisburg, PA scene.

83.042

Faust, N.L.; Rowan, Michael J.; Georgia Institute of Technology, Engineering Experiment Station.. **FEED (Field Exploitation Elevation Data) Evaluation**, (Army Engineer Topographic Labs.) 1983.

Abstract: This report is an evaluation of the Field Exploitation of Elevation Data (FEED) as it relates to the expressed objectives. Software and hardware were considered. The task of the U.S. Army Engineer Topographic Laboratories (USAETL) is to develop topographic and terrain analysis products to support the functions of the Field Army. Concurrently, USAETL must evaluate and determine the form in which these products can evolve to the battlefield. The 1980-1984 Department of the Army Consolidated Topographic Support Program (DACONTSP) had expressed an interest in automated topographic support capabilities to rapidly produce terrain-related cartographic products. It is within this environment that the FEED system has been developed.

83.043

Lauer, D.T.; Moore, D.; EROS Data Center. **Landsat 4 Investigations of Thematic Mapper and Multispectral Scanner Applications**, (National Aeronautics and Space Administration) 1983.

Abstract: Digital data and analyses suggest the potential for TM data to provide improved land cover information with the mid-IR band being especially useful. Coefficients of variations for major land categories were greater for MSS data channels than for TM channels. Intrepretationof black and white images of the six reflective TM bands indicates a strong interpreter prefence for bands 5 and 7 for making distinctions in most of the classification categories that were addressed; however, a strong case can be made for a color composite containing visible, near-IR, and mid-IR spectral regions when distinguishing vegetation. A transformation from each red, green, blue color space into hue, intensity, and saturation space has potential for enhanced interpretability of TM color composite images. A perspective view transformation was demonstrated that could be useful for presently registered layers of spatial data in an oblique view format.

83.044

Laws, Kenneth I.; **Evaluation of Scene Analysis Algorithms,** (at: Image Understanding: Workshop (14th) at Arlington, Virginia) (SRI International) 1983.

Abstract: This paper describes software evaluation methods developed at SRI International to evaluate contributions to the ARPA/DMA Image Understanding (IU) Testbed. Examples of evaluation results are also presented. The primary purpose of the IU Testbed is to provide a means for transferring technology from the DARPA-sponsored IU research program to DMA and to other organizations in the defense community. The approach taken to achieve this purpose has two components: 1) The establishment of a uniform environment as compatible as practical with the environments of research centers at universities participating in the IU research program. Thus, organizations obtaining copies of the Testbed can receive a continuing flow of new results derived from on-going research, and 2) The acquisition, integration, testing, and evaluation of selected scene analysis techniques that represent mature examples of generic areas of research activity. These contributions from participants in the IU research program will allow organizations with Testbed copies to begin the immediate exploration of applications of IU technology to problems in automated cartography and other areas of scene analysis. (Author)

83.045

Hall, Robert H.; **Mapping, Charting & Geodesy at the Defense Mapping Agency,** (Defense Mapping Agency Aerospace Center) 1983.

Abstract: This paper provides an overview of mapping, charting, and geodesy programs at the Defense Mapping Agency. Conventional maps and charts along with special products are covered. Special emphasis is placed on current and future digital data programs, processes, and equipment. Future programs including equipment, techniques, and computer assisted cartography are covered. (Author)

83.046

National Aeronautics and Space Administration. **Earth Resources: A Continuing Bibliography with Indexes Issue 37,** (National Aeronautics and Space Administration) 1983.

Abstract: This bibliography lists 512 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1 and March 31, 1983. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis.

83.047

Carroll, Roberta; **Automated Gully Delineation Using Digital Elevation Data,** (at: ACSM-ASP Convention at Washington DC) (Army Engineer Topographic Labs) 1983 .

Abstract: The delineation of drainage gullies, in mapping operations, is a highly labor-intensive effort. ETL has initiated a preliminary study to automate this manual task. This has led to a computer algorithm for extracting the drainage channels from digital elevation data. The algorithm, which is based on the theory of critical numbers, provides both the location and orientation of the gullies. This paper discusses the algorithm and the preliminary results from three test cases.

83.048

National Aeronautics and Space Administration. **Earth Resources: A Continuing Bibliography with Indexes**, (National Aeronautics and Space Administration) 1983.

Abstract: This bibliography lists 576 reports, articles, and other documents introduced into the NASA Scientific and Technical Information System between October 1 and December 31, 1982. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agricultural and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentaion and sensors, and economic analysis.

83.049

National Technical Information Service. **Remote Sensing of Agricultural Resources. October 1973 - January 1983 (Citations from the NTIS Data Base)**, (National Technical Information Service) 1983.

Abstract: Results of agricultural resources surveys using remote sensing techniques for crop identification, acreage measurement, land mapping, and forest density studies are discussed. A few abstracts pertain to identification of plant diseases and insect pests and fishery resources assessment. (This updated bibliography contains 311 citations, 20 of which are new enties to the previous edition.)

83.050

Naylor, Alonzo D.; Lafollette, William H.; **Report on DMA's Prototype Graphics from Enhanced LANDSAT Imagery for Applications to Hydrographic Charting**, (Defense Mapping Agency Hydrographic/Topographic Center) 1983.

Abstract: The Defense Mapping Agency (DMA) is currently developing prototype graphics from remotely sensed imagery for support to hydrographic survey planning and DMA's nautical chart maintenance program. The imagery for these prototypes is LANDSAT scenes that are enhanced by digital image processing techniques, or processed totally in an analog mode for quick response requirements. This paper discusses these processing approaches within the framework of the prototype efforts. LANSAT's multispectral scanner imagery in the Makassar Strait of Indonesia is computer enhanced to highlight hydrographic information such as shoals, uncover areas, land-water boundaries, and shallow water depth intervals. These enhancements are graphically presented in a variety of scales, formats, and color assignments representing three approaches to computer enhancements. To produce quick response graphics, the analog approach to enhancement involves the use of a color additive viewer and multiscale projector/viewer for analysis of multispectral/multitemporal LANDSAT film. The prototype graphics using this approach were developed to support DMA's chart maintenance program, but could be used as a tool for survey planning in shallow waters.

83.051

Saukkola, Pekka; Jaakkola, Sipi; **Numerical Image Interpretation in Forest Inventory and Mensuration**, (Finland Technical Research Centre) 1983.

Abstract: The use of digital multispectral scanner data for the surveying of timber stands and extensive forest areas is described. Spectral signature measurements of forest canopies were made by using a spectroradiometer mounted in a helicopter. The interpretations of various forest characteristics were determined by making supervised classifications supported by appropriate tests in the field. The best results were achieved with cover-type mapping, which involves mapping tree species stratified into broad development classes. The results of a multi-stage timber volume inventory are explained. Background information on the design of forest resource information systems based on multi-spectral scanner data is provided.

83.052

Hill, J.M.; Harlow, C.A.; Zimmerman, P.; **Geographic Information Systems as Applied to the Manipulation of Environmental Data**, (in: Environmentalist,) (Louisiana State University) 1983.

Abstract: A geographic information system (GIS) is a computerized system for processing geographic and/or mapped data. In developing a GIS, the system should be capable of processing a wide variety of pertinent data including points, maps, lines and aircraft or satellite derived information. The remote sensing & image processing lab at Louisiana State Univ. expanded its image processing system to incorporate the needed functions for utilizing GIS oriented capabilities. The use of the GIS in natural resource management and land use classification is demonstrated.

83.053

Woodcock, Curtis E.; Strahler, Alan H.; Franklin, Janet; **Remote Sensing for Land Management and Planning**, (in: Environmental Management, Vol.7, no.3) (University of California) 1983, May.

Abstract: The primary role of remote sensing in land management has been to provide data concerning physical characteristics that influence allocation and planning. These physical properties have typically been assessed through aerial photography, which is used to develop resource maps and to monitor changing environmental conditions. Many newly emerging uses of remote sensing involve digital images that are collected, stored, and processed automatically by electromechanical scanning devices and computers. Future uses of remote sensing in land planning will involve geographic information systems and ecological modelling.

83.054

Williams, Lance; **Pyramidal Parametrics**, (in: Comput Graphics (ACM), Vol.17, no.3) (at: SIGGRAPH '83 Conf. Proc. at Detroit, MI, USA) (New York Inst. of Technology, Computer Graphics Lab) 1983 pp.1-11.

Abstract: Pyramidal data structures are of proven value in image analysis and have interesting application to image bandwidth compression and transmission. 'Pyramidal parametrics', pyramidal data structures with intra- and inter-level interpolation, are here proposed for use in image synthesis. By continuously varying the detail with which data are resolved, pyramidal parametrics provide economical approximate solutions to filtering problems in mapping texture and illumination onto surfaces, and preliminary and experiments suggest they may provide flexible surface representations as well. 17 refs.

83.055

Matthews, Elaine; **Global Vegetation and Land Use: New High-Resolution Data Bases for Climate Studies**, (in: J. Clim. Appl. Meteorol., Vol.22, no.3) (M/A COM Sigma Data Inc.) 1983, March pp.474-487.

Abstract: Global vegetation and land-use data bases, designed for use in studies of climate and climate change, were compiled in digital form drawing upon approximately 100 published sources complemented by a large collection of satellite imagery. The vegetation data were encoded using the UNESCO classification system; land-use data were encoded using a classification system developed by the author. The vegetation and land-use data were then integrated into a land-cover data base. Areal estimates for most ecosystems from the land-cover data bases were found to be significantly different from areal estimates derived from two other global land-cover sources. Possible explanations for discrepancies among these data bases include differences in ecosystem definitions and source material used in compilation. As an example of the flexibility of the new data base, areal estimates and brief definitions of selected ecosystem subdivisions are presented for the world and mapped for North America. 110 refs.

83.056

Vickers, R.S.; Burns, P.L.; Radio Phys. Lab., SRI International. **Precision Topographic Mapping Through Tropical Forests by VHF Radar,** (at: Digest. 1983 International Geoscience & Remote Sensing Symposium (IGARSS '83), San Francisco CA, USA) (IEEE) 1983.

Abstract: A short-pulse radar profiling system has been developed that achieves complete penetration through tropical forested areas of Sumatra. The treetop profile and the ground profile were both clearly identified. This radar concept can be incorporated into a total topographic survey system with satellite survey control points and precision microwave positioning. The mapping method uses a long-wavelength radar pulse to penetrate the jungle tree canopy and give the radar altitude to the ground surface, combined with a precision combination barometric/inertial altimeter for absolute altitude determination. After the flights, the profiles are assembled, processed, ABSTRACT = and plotted using automated contouring routines on a ground-based computer. Maps can be produced showing drainage, topographic contour, swamps, rivers and tree height to a scale of 1:10,000 or smaller, corresponding to contour intervals down to 5 m or less.

83.057

Montgomery, G.; **The Utility/Municipal Market for Mapping,** (in: Comput. Graphics World (USA), Vol.6, no.3) (Kellogg Corp.) 1983, March pp.79-82.

Abstract: There is a growing number of automated mapping and facilities management systems (AM/FM systems) being installed by a wide variety of companies. AM/FM systems are those computer graphics systems that graphically represent the location, description and relationships of geographic features and management information about these features and facilities (including attributes and connectivity). They are a valuable aid to management decision making. This article presents a survey conducted by Kellogg Corporation which shows the shape and development of the mapping industry and the huge potential market for AM/FM systems.

83.058

Robison, A.D.; **Bit-Merge Routine Speeds Graphics,** (in: EDN (USA), Vol.28, no.17) (Case Western Reserve University) 1983, August pp.218-220.

Abstract: Implementing a logical function in software by directly translating an equivalent hardware function is not always the best approach; an indirect method can often save memory and reduce execution time. An example from a bit-mapped graphic application is discussed. This is the problem of merging certain bits from a source field into corresponding bits of a destination feed without disturbing other bits in the destination. in the destination. In this example, a mask determines which bits get modified; a bit moves from source to destination if and only if its corresponding mask bit is set. The bit-merge operation is essentially a 2-input multiplexing, and in a typical hardware implementation, the number of gate levels determines overall speed. Although the parallel creation of two terms is an advantage in hardware, a software version must save one of the terms temporarily, using extra time and memory. The point is demonstrated using a circuit diagram and an assembly language routine.

83.059

Senn, H.; **Geoprocessing - Geodetic Data Processing,** (in: Output (Switzerland), Vol.12, no.8) (IBM) 1983, August pp.33-42.

Abstract: The article is a summary of a lecture to the Swiss computer Graphics Association in January 1983, based mainly upon IBM technology, on the subject of data processing applied to the earth sciences of geodesy, geography, hydrology, etc., etc., and to related disciplines arising out of them. It covers, inter alia, image processing, the management of geodetic data banks and information structures, mapping and the preparation of plans and presentation of data, the relevant hard- and software, and the processing of photographs from aircraft and satellites, in particular those from Landsat. An appendix deals with LIS and GIS (Land- and Geographical Information Systems.)

83.060

Fleming, J.; **NAPLPS: A New Standard for Text and Graphics. IV. More Advanced Features and Conclusions,** (in: BYTE (USA), Vol.8, no.5) (Unit Corp.) 1983, May pp.272-284.

Abstract: For PT.III see ibid., vol. 8, no. 4 (1983). Describes a standard way to encode color mapping and animation, and gives some predictions on how NAPLPS will be used by personal computers.

83.061

Miller, J.; **Mapping - A Systematic Approach,** (in: Comput. Syst. (GB), Vol.3, no.2) (Kongsberg Ltd.) 1983, February pp.45-48.

Abstract: In recent years the computer has transformed the conventional two dimensional map into a three dimensional data base of all physical features and attributed data. The author describes the facilities offered by such systems in the key areas of topography, utility mapping and oil and gas exploration.

83.062

Peuquet, Donna J.; **A Hybrid Structure for the Storage and Manipulation of Very Large Spatial Data Sets,** (in: Comput. Vision, Graphics and Image Process. (USA), Vol.24, no.1) (University of California) pp.14-27.

Abstract: The map data input and output problem for geographic information systems is rapidly diminishing with the increasing availability of mass digitizing, direct spatial data capture and graphics hardware based on raster technology. Although a large number of efficient raster-based algorithms exist for performing a wide variety of common tasks on these data, there are a number of procedures which are more efficiently performed in a vector mode or for which raster mode equivalents of current vector-based techniques have not yet been developed. A Hybrid spatial data structure is presented, named the vaster structure, which can utilize the advantages of both raster and vector structures while potentially eliminating, or greatly reducing, the need for raster-to-vector and vector-to-raster conversion. Other advantages of the vaster structure are also discussed.

83.063

Lorenz, R.W.; Loew, K.; **Improvements and Shortcomings in the Computation of Area Coverage by the Use of Topographical Data Bases,** (at: Second International Conference on Radio Spectrum Conservation Techniques at Birmingham, England) (IEE) 1983.

Abstract: Field-strength prediction by the use of topographical data bases is considered to be a means for optimum selection of base station sites. The example shown illustrates the reasons for rather large prediction errors in a detailed comparison with measurements. Field-strength prediction as developed so far is a very good means to get a survey of the area coverage. The resolution of the authors' topographical data and their prediction programme, however, do not allow a reliable prediction at every point of the area.

83.064

Kollias, V.J.; Kollias, J.G.; **Design and Coding Considerations of the Soil Data Language Interpreter,** (in: Comput. and Geosci., Vol.9, no.2) (Lab. of Soils and Agricultural Chem.) pp.211-220.

Abstract: A query language, named soil data language (SDL), for retrieving information from a soil data bank, is part of the ARSIS (A Relational Soil Information System) system, currently being developed in Greece. The interpreter of the language accepts input programs, expressed as SDL commands, and outputs the requested informtion. The authors describe design principles employed during the coding of the interpreter of the language. The derived program can be modified to cover eventual alterations to the specifications of language or the content and structure of the data bank. The study may be seen as an initiative to the design of generalized soil and land information systems that primarily are concerned with the easy adaptation to a variety of national processing requirements.

83.065

Costanzo, D.J.; **Mapping Applications of Video Disc Technology,** (at: Defense Computer Graphics Conference at Chicago, IL.) (Army Engineer Topographic Labs) 1983.

Abstract: Video discs can store large quantities of analog map products in a compact, nonvolatile format. Interfacing them to microcomputers provides a portable, rugged means of accessing cartographic information. This new technology has many potential applications in map data storage, navigation, training, and decision making. The U.S. Army Engineer Topographic Laboratories (USAETL) is studying hardware, software and map design aspects of video discs with a prototype Map Video Processing (MVP) system. (Author)

83.066

Rochester Inst. of Tech.. **Landsat 4 Band 6 Data Evaluation,** (National Aeronautics and Space Administration) 1983.

Abstract: Computer modelled atmospheric transmittance and path radiance values were compared with empirical values derived from aircraft underflight data. Aircraft thermal infrared imagery and calibration data were available on two dates as were corresponding atmospheric radiosonde data. The radiosonde data were used as input to the LOWTRAN 5A code. The aircraft data were calibrated and utilized to generate analogous measurements. The results of the analysis indicate that there is a tendency for the LOWTRAN model to underestimate atmospheric path radiance and overestimate atmospheric transmittance.

83.067

Leonhart, L.S.; Wukelic, G.E.; Foote, H.P.; Blair, S.C.; Battelle Pacific Northwest Laboratories. Richland, Wa.. **Monitoring Land and Water Uses in the Columbia Plateau Using Remote-Sensing Computer Analysis and Integration Techniques,** (at: Energy Resource Management 1983 at San Francisco CA, USA) (Department of Energy) 1983.

Abstract: This study successfully utilized advanced, remote-sensing computer-analysis techniques to quantify and map land and water-use trends potentially relevant to siting, developing, and operating a high-level national, nuclear waste repository on the US Department of Energy's Hanford Site in eastern Washington State. Specifically, using a variety of digital data bases (primarily multidate LANDSAT data) and digital analysis programs, the study produced unique numerical data and integrated data reference maps relevant to regional (Columbia Plateau) and localized (Pasco Basin) hydrologic considerations associated with developing such a facility. Because all study data developed are in digital form, they can be called upon to contribute to future reference repository location monitoring and reporting efforts, as well as to be utilized in other US Department of Energy programmatic areas having technical and/or environmental interest in the Columbia Plateau region. The results obtained indicate that multidate digital LANDSAT data provide an inexpensive, up-to-date and accurate data base and reference map of natural and cultural features existing in any region. These data can be (1) computer enhanced to highlight selected surface features of interest; (2) processed/analyzed to provide regional land cover/use information and trend data; and (3) combined with other line and point data files to accommodate interactive, correlative analyses and integrated colorgraphic displays to aid interpretation and modeling efforts. Once the digital base is established, selected sit informatin can be assessed immediately. various forms of data can be accessed concurrently or separately, and data sets may be displayed or mapped at any scale. Available editing software provides the opportunity to generate credible scenarios for a site while preserving the actual data base. 6 references. (ERA citation 08:056970)

83.068

Selleck, C.B.; Sears, M.P.; Sandia National Labs.. **PLT: A Multipurpose Plotting Package,** (Department of Energy) 1983.

Abstract: PLT is a device independent plotting package developed under the ARIES project in Department 1530. It is built on top of the Sandia Virtual Device Interface (VDI) and therefore supports many different devices. The capabilities of the package include basic plotting primitives, clipping subroutines, color, element plotting routines, software and hardware text, two dimensional graph plotting, mapping subroutines and routines to set various PLT parameters. PLT is coded in RATFOR, a FORTRAN preprocessor and is currently supported on VAX/VMS.

83.069

Hampel, V.E.; Bailey, C.; Kawin, R.A.; Lann, N.A.; McGrogan, S.K.; Lawrence Livermore National Lab.. **TIS: An Intelligent Gateway Computer for Information and Modeling Networks, Overview,** (Department of Energy) 1983.

Abstract: The Technology Information System (TIS) is being used to develop software for Intelligent Gateway Computers (IGC) suitable for the prototyping of advanced, integrated information networks. Dedicated to information management, TIS leads the user to available information resources, on TIS or elsewhere, by means of a master directory and automated access procedures. Other geographically distributed information centers accessible through TIS include federal and commercial systems like DOE/RECON, NASA/RECON, DOD/DROLS, DOT/TIC, CIS, and DIALOG in the United States, the chemical information systems DARC in France, and DECHEMA in West Germany. New centers are added as required.

83.070

Levenson, J.B.; Snider, M.A.; Argonne National Laboratory, Argonne IL.. **CEREAS: An Interactive Computer-Mapping System for Environmental Assessments,** (at: Energy Resource Management '83 at San Francisco CA, USA) (Department of Energy) 1983.

Abstract: CEREAS (Categorical Exclusion Review/Environmental Assessment System) provides the environmental scientist with the tools needed to quickly process an application for permit to drill (APD). It provides an interactive referencing system for producing maps of potential constraint areas surrounding oil and gas activity sites. The design of the system makes it highly flexible. CEREAS was specifically developed to support the CER procedure in processing APDs for oil and gas in the western overthrust belt. It should be emphasized, however, that the system is not limited by geographical boundaries. CER criteria, or oil and gas activities. Of the three system components, only the mapping program remains constant. The command processor and data bases are necessarily project-specific, contributing to the overall system flexibility. Any geographic data potentially defined by longitude/latitude coordinates can be designated as a data base. CEREAS, as described here, is basically a graphic data retrieval system.

83.071

Haskell, K.H.; Sandia National Labs.. **Portable FORTRAN Contour-Plotting Subprogram,** (Department of Energy) 1983.

Abstract: In this report we discuss a contour plotting Fortran subprogram. While contour plotting subroutines are available in many commercial plotting packages, this routine has the following advantages: (1) since it uses the Weasel and VDI plot routines developed at Sandia, it occupies little storage and can be used on most of the Sandia time-sharing systems as part of a larger program. In the past, the size of plotting packages often forced a user to perform plotting operations in a completely separate program; (2) the contour computation algorithm is efficient and robust, and computes accurate contours for sets of data with low resolution; and (3) the subprogram is easy to use. A simple contour plot can be produced with a minimum of information provided by a user in one Fortran subroutine call. Through the use of a wide variety of subroutine options, many additional features can be used. These include such items as plot titles, grid lines, placement of text on the page, etc. The subroutine is written in portable Fortran 77, and is designed to run on any system which supports the Weasel and VDI plot packages. It also uses routines from the SLATEC mathematical subroutine library.

83.072

Clark, B.A.; Fowler, R.H.; Oak Ridge National Laboratory, TN.. **User's Manual for CONPLT: A General Purpose Contour Plotter,** (Department of Energy) 1983.

Abstract: A package to construct contour plots on a two-dimensional grid has been developed at Oak Ridge and installed on the Oak Ridge computers. The package, CONPLT, may be used with either cartesian or polar coordinates. The DISSPLA software package is used to do the plotting.

83.073

Littlefield, R.J.; Battelle Pacific Northwest Laboratories. Richland, Wa.. **Developing Computer-Graphics Programs for Specialized Applications,** (at: SIGGRAPH '83 annual conference at Chicago IL, USA) (Department of Energy) 1983.

Abstract: The goal of this session is to teach general techniques for developing specialized applications of computer graphics. It addresses both developing effective applications, and developing applications effectively. That is, we discuss both the final form of application software, and the process by which it is developed. We talk only about software. Choosing display formats, media, and hardware are also important aspects, but are not discussed here. The presentation is organized as follows: overview of the general principles; description of the geographic mapping applications and its implementation; and discussion of the general principles as reflected in the mapping applications.

83.074

United States. Department of Agriculture.. **Database Has Been Developed to Aid Water Suppliers,** (Department of Agriculture) 1983.

Abstract: This citation summarizes a one-page announcement of technology available for utilization. Any project that concerns the nation's water supplies now can have instant access to 50 years of hydrologic data compiled by researchers of the US Department of Agriculture's (USDA) Agricultural Research Service (ARS). All that is required is a quick REPHLEX REtrieval Procedures for Hydrologic Data from ARS EXperimental Watersheds. REPHLEX is a new computer system for gaining direct telephone access to the ARS Hydrologic Data Bank stored in the USDA's Washington Computer Center (WCC) in the District of Columbia. The data bank primarily contains precipitation and runoff records from approximately 300 watersheds around the U.S. For many watersheds, the Bank also includes information onland use, vegetation and cover conditions, as well as soils, topography, geology and climatological data. FOR ADDITIONAL INFORMATION Contact Stephen Berberich, Agricultural Research Service, Bldg. 003, Room 250, BARC-W, Beltsville, MD 20705.

83.075

United States. Department of the Army. **Landsat Data is Being Used to Improve Hydrological Modeling**, (Department of the Army) 1983.

Abstract: This citation summarizes a one-page announcement of technology available for utilization. For more than a decade researchers have been using satellite imagery for regional site analyses, and currently data from the Landsat-MSS (Multispectral Scanner Subsystem) are being analyzed in an effort to improve the capability of large-scale hydrologic models. Recently, researchers have been working on a study aimed at integrating Landsat land cover data into a hydrologic model developed. In order to make the Landsat imagery compatible with a 40-acre grid cell size selected. The researchers had to transform the digital data through a number of complex procedures. This study demonstrates that Landsat digital data can be placed into a geographic information system at low cost. For additional Information contact Harlan McKim, Cold Regions Research & Engineering Lab., PO Box 282, Hanover, NH 03755

83.076

United States. Department of Commerce. **Automated Information Directory Systems (AIDS): Determine Optimum Bus and/or Subway Routing for Riders**, (Department of Commerce) 1983.

Abstract: This citation summarizes a one-page announcement of technology available for utilization. AIDS is a singularly unique online computer assisted information system designed to determine the optimum bus and or subway routing between any two points. It was developed for use in the greater Washington, D.C. area. AIDS is currently used to answer about 50,000 patron queries per week. Using bus and subway times and routings, street names and address ranges, maps, landmarks, etc., AIDS determines the optimum trip by the time of day for the requested travel. The system is written in the FORTRAN programming language for implementation on a Hewlett-Packard 3000 series 11 computer using the MPE Release 3 operating system. FOR ADDITIONAL INFORMATION: Contact: Mr. Al Wenberg, Computer Products Division, NTIS, Springfield VA 22161. Refer to PB83-109462/NAC.

83.077

Caron, L.M.; Sidor, D.; **Inventory of State Natural Resources Information Systems**, (National Aeronautics and Space Administration) 1983.

Abstract: The status of a project to inventory state natural resources information systems is summarized. All tasks accomplished are described, and tasks remaining to be completed are outlined.

83.078

Fischler, Martin A.; Hanson, Andrew J.; **Image Understanding Research and Its Application to Cartography and Computer-Based Analysis of Aerial Imagery**, (SRI International) 1983.

Abstract: The authors' principal objective in this research program has been to obtain solutions to fundamental problems in computer vision that have broad military relevance, particularly in the areas of cartography and photo interpretation. Now-completed research has been directed towards developing automated techniques for stereo-compilation, delineation of linear features, scene partitioning, image matching, and image to database correspondence. In addition to their own research, the authors have designed and implemented an integrated testbed system that incorporates results of research produced throughout the Image Understanding community. This system provides a coherent framework for demonstration and evaluation of the accomplishments of DARPA's Image Understanding program, thereby facilitating transfer of this technology to appropriate military organizations.

83.079

National Technical Information Service. **NAVSTAR Global Positioning System. 1977-October, 1983 (Citations from the International Information Service for the Physics and Engineering Communities Data Base)**, (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning the global system of navigation satellites developed to provide immediate and accurate worldwide three-dimensional positioning by air, land, and sea vehicles equipped with appropriate receiving equipment. Developments and applications of the NAVSTAR system are examined. Although the global positioning system is primarily a military system, civilian utilization and potential are included as well. (This updated bibliography contains 163 citations, 18 of which are new entries to the previous edition.)

83.080

Campbell, W.J.; Imhoff, M.L.; Robinson, J.; Gunther, F.; Boyd, Robert W.; National Aeronautics and Space Administration. **Site Characterization Information Using LANDSAT Satellite and Other Remote Sensing Data - Integration of Remote Sensing Data with GIS. A Case Study in Pennsylvania**, (Computer Sciences Corp.) 1983.

Abstract: A research project was conducted by the National Aeronautics and Space Administration in conjunction with the Nuclear Regulatory Commission (NRC) and the Pennsylvania Power and Light Company (PP&L) for evaluating the utility and cost effectiveness of incorporating digitized aircraft and satellite remote sensing data into a geographic information system for facility siting, environmental impact assessments, and obtaining site characterization data and information for use in NRC's regulatory actions. This research focused on the evaluation of several types of multisource remotely sensed data representing a variety of spectral band widths and spatial resolution. High resolution aircraft photography, Landsat MSS, and 7 band Thematic Mapper Simulator (TMS) data were acquired, analyzed, and evaluated for their suitability as input to an operational geographic information system (GIS).

83.081

Read, Chung Hye; **Hydrographic Survey Requirements System (HYSUR)**, (Defense Mapping Agency Hydrographic/Topographic Center) 1983.

Abstract: The Defense Mapping Agency (DMA) has no automated system with which to determine the survey precedence of the 8.2 million square nautical miles of worldwide coastal areas which require hydrographic surveying. In response to this vast requirement, the DMA Hydrographic/Topographic Center (HTC) is developing the Hydrographic Survey Requirements System (HYSUR). This software system will enable managers to make timely, systematic decisions, thereby enhancing the utility of the Naval Oceanographic Office (NAVOCEANO) survey vessels. This report discusses the practical applications of this system which will identify hydrographic data deficiency areas; establish a rank order for required survey areas considering economic, political, military, and physical factors; provide an alternative planning capability to answer management-level questions; and produce survey program plans based on the results of the ranking procedures, available resosources, and estimated cost. (Author)

83.082

National Technical Information Service. **Plotters. 1970-July, 1983 (Citations from the Engineering Index Data Base)**, (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning design techniques, manufacturing methods, and applications software of plotters. The features of digital, analytical, and color plotters are discussed. Computer techniques in plotting devices and motor design for plotters are considered. Applications in biomedical engineering, traffic control, geological survey, and engineering design are presented. (Contains 101 citations fully indexed and including a title list.)

83.083

National Technical Information Service. **Plotters. 1972-July, 1983 (Citations from the International Aerospace Abstracts Data Base),** (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning design techniques, manufacturing methods, and applications software of plotters. Plotters for photogrammetric and computer graphic equipment are discussed. Digital techniques in plotter design are presented. Applications in aerial photography, remote sensing, automatic control, and design analysis are included. (Contains 141 citations fully indexed and including a title list.)

83.084

National Technical Information Service. **Plotters. 1976-July, 1983 (Citations from the Energy Data Base),** (National Technical INformation Service) 1983.

Abstract: This bibliography contains citations concerning design techniques, manufacturing methods, and applications software of plotters. Computer graphic and coding techniques in plotting devices are discussed. Applications in temperature measurement, electrical and electronic equipment, and computer output display are presented. Plotters for power generation control systems are also discussed. (Contains 140 citations fully indexed and including a title list.)

83.085

McKeown, Jr., David M.; **MAPS: The Organization of a Spatial Database System Using Imagery, Terrain, and Map Data,** (at: Workshop (14th) Held at Arlington, Virginia) (Carnegie-Mellon University) 1983.

Abstract: This paper presents the system description and organization of MAPS, the Map Assisted Photo interpretation System. MAPS is a large integrated database system containing high resolution aerial photographs, digitized maps and other cartographic products, combined with detailed three dimensional descriptions of man-made and natural features in the Washington D.C. area. This paper discusses three major topics. First, classification of different models of database systems for cartographic applications is presented together with a discussion of their inherent strengths and limitations. These models are the Image Database model, the Map Picture Database model and the Image/Map Database (IMD) model. Second, the author argues for the utility of the Image/Map Database model, discuss tasks and presents a general description of the model. This model describes components, facilities and techniques that should be present in such a system, and a range of tasks that can be supported by the model. Finally, he describes the MAPS system in terms of the (IMD) model, and discuss three applications which utilize and integrate image, terrain, and map data in a powerful manner. He also discusses what has been learned during the implementation of the MAPS system, some ideas on the proper interfaces between components, where modularity should be achieved, and point to future work.

83.086

National Technical Information Service. **NAVSTAR Global Positioning System. 1972-July, 1983 (Citations from the International Aerospace Abstracts Data Base),** (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning planetary rotation influence on artificial and natural satellites, ship navigation applications, receiver construction and performance, civilian applications, land applications, and in-flight monitoring and applications. Technological forecasting as well as reliability, performance testing, and evaluations are included. (This updated bibliography contains 194 citations, 12 of which are new entries to the previous edition.)

83.087

National Technical Information Service. **NAVSTAR Global Positioning System. 1970-July, 1983 (Citations from the NTIS Data Base),** (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning satellite navigational systems, land/sea navigational applications, signal processing, and precision positioning technology. Receiver system error analysis, sensitivity, hardware, and applications are also discussed. (This updated biblioography contains 199 citations, 111 of which are new entries to the previous edition.)

83.088

Colwell, J.E.; Sanders, P.A.; Thomson, F.J.; Environmental Research Inst. of Michigan. **Development and Testing of Landsat-Assisted Procedures for Cost-effective Forest Management,** (National Aeronautics and Space Administration) 1983.

Abstract: The utility of a single-date categorized LANDSAT data as a source of land cover information was investigated for use in assessing elk habitat quality in the Clearwater National Forest in Idaho. The LANDSAT data categorized conifer forests on the basis of the percentage crown closure. This information was used to evaluate habitat quality on the basis of the ratio of cover to forage. The preliminary conclusion is that such LANDSAT data can be helpful if the relationships between crown closure and hiding cover can be adequately defined. In addition, LANDSAT data from 1972 and 1981 were merged and change images were created which indicated areas where major changes were taking place in the forest. These areas could then be examined by field survey or aerial photography to further characterize the nature and magnitude of the change in the areas defined. Data bases can thus be updated more efficiently and economically.

83.089

National Aeronautics and Space Administration. **Forest Resource Information System (FRIS),** (National Aeronautics and Space Administration) 1983.

Abstract: The technological and economical feasibility of using multispectral digital image data as acquired from the LANDSAT satellites in an ongoing operational forest information system was evaluated. Computer compatible multispectral scanner data secured from the LANDSAT satellites were demonstrated to be a significant contributor to ongoing information systems by providing the added dimensions of synoptic and repeat coverage of the Earth's surface. Major forest cover types of conifer, deciduous, mixed conifer-deciduous and non-forest, were classified well within the bounds of the statistical accuracy of the ground sample. Further, when overlayed with existing maps, the acreage of cover type retains a high level of positional integrity. Maps were digitized by a graphics design system, overlayed and registered onto LANDSAT imagery such that the map data with associated attributes were displayed on the image. Once classified, the analysis results were converted back to map form as a cover type of information. Existing tabular information as represented by inventory is registered geographically to the map base through a vendor provided data management system. The notion of a geographical reference base (map) providing the framework to which imagery and tabular data bases are registered and where each of the three functions of imagery, maps and inventory can be accessed singly or in combination is the very essence of the forest resource information system design.

83.090

Edwards, Daniel L.; **Terrain Analysis Database Generation through Computer-Assisted Photo Interpretation,** (at: ACSM-ASP Convention (1983) at Washington, DC) (Army Engineer Topographic Labs.) 1983.

Abstract: The creation of digital terrain analysis databases through on-line photo interpretation has been the focus of computer-assisted photo interpretation research (CAPIR) at USAETL. An APPS IV analytical plotter equipped with stereo superposition linked to a minicomputer is used for photo interpretation and digitizing. Digital data is input in arc/node format with attributes and the points are stored in three dimensions; latitude, longitude, and elevation. To demonstrate these capabilities, high-altitude infrared photography of the Fort Belvoir, Virginia, area was used for photo interpretation and digitization, supplemented by large-scale photography and field data. Landforms, surface drainage, soils, and vegetation were individually interpreted and digitized. Digital elevations, measured from stereo imagery, were used to produce contour and slope overlays. The resultant digital database was readily accessed and used as a resultant digital database was readily accessed and used as a basis for analysis and modeling. This paper briefly describes the hardware, software and methods used to generate a digital terrain analysis database.

83.091

Lozar, Robert C.; Balbach, Harold; **Environmental Early Warning System (EEWS): Concept Description**, (Construction Engineering Research Lab. (Army)) 1983.

Abstract: This report gives a concept description of the Environmental Early Warning System (EEWS) developed by the U.S. Army Construction Engineering Research Laboratory (CERL). The EEWS is an interactive computer system designed to give the Department of Army Headquarters and Major Command planning and decision-making personnel a way to quickly find potential environment-related problems associated with proposed changes in troop strength, mission, facilities, natural resource management, and land use. The system is designed to help Army managers during the earliest stages of Army planning and is not a substitute for current planning methods or Environmental Assessments or Impact Statements. Included are a system description from the user's point of view, a brief explanation of how the system calculates results, and descriptions of the system's tabular and location-specific data handling capabilities.

83.092

Uncapher, Keith W.; **Research Program in Computer Technology**, (University of Southern California, Information Sciences Inst.) 1983.

Abstract: This report summarizes the research performed by USC/Information Sciences Institute from July 1, 1981, to June 30, 1982, for the Defense Advanced Research Projects Agency. The research applies computer science and technology to areas of high DoD/military impact. The ISI program consists of thirteen research areas: Cooperative Interactive Systems; Mapping Designs Between Language Levels; Specification Acquisition From Experts; VLSI--Services and Research; Internetwork Concepts Research; Command Graphics; Wideband Communication; Formal Semantics;QPRIM; Interlisp; Strategic C3 System Experiment Support; New Computing Environment; and Computer Research Support.

83.093

Faintich, Marshall B.; **Interactive Analysis of Digital Terrain Elevation and Surface Feature Data Bases**, (Defense Mapping Agency Aerospace Center) 1983.

Abstract: The Defense Mapping Agency produces digital data bases that describe the physical appearance of the surface of the earth. A dramatic impact has been made in the ability to analyze these digital data bases by applying state-of-the-art digital image technology processing and display concepts. For purposes of quality control and data base applicability investigations, DMA has developed the Sensor Image Simulator (SIS), a very high speed data base edit station and static scene simulator that allows for interactive query and manipulation of individual features in the data base displays and/or simulated sensor scenes to determine the corresponding data base elements responsible for the simulated features. The SIS was installed at DMA in 1981, and plays a key role in determining the applicability of prototype data bases for use in advanced training simulators, as well as to ensure the quality of, and coherence between, the various digital data bases prior to new data insertion into the master cartographic data base files. (Author)

83.094

National Technical Information Service. **Laser Scanning: Technology and Applications. 1972-March, 1983 (Citations from the International Aerospace Abstracts Data Base),** (National Technical Information Service) 1983.

Abstract: This bibliography contains citations concerning laser scanning techniques and its applications. Topics include a discussion of state-of-the-art laser scanning systems including the scanning laser doppler anemometer system, airborne scanners, and omnidirectional and volume laser scanners. Applications include the use of laser scanners in solar-cell inspection, integrated circuit testing, image acquisition, detection of oil slicks with scanning laser radar, plasma diagnosis, and cartographic scanning systems. (This updated bibliography contains 166 citations, 13 of which are new entries to the previous edition).

83.095

Bramson, Irwin; Ricciardone, Joanne; MITRE Corporation, Bedford, MA.. **SIFT: SWIC Implementation of Front-End Tools,** (Electronic Systems Div.) 1983.

Abstract: SIFT, the SWIC Implementation of Front-end Tools, is a set of four statistics generation, collection, and display routines developed under the C2 CONCAP project in support of the Survivable Warning Information Concept (SWIC). These routines were written in FORTRAN IV-Plus for use on the RSX-11M operating system and are currently operational on a PDP-11/70. This paper presents the functional capabilities embodied by SIFT along with a detailed description of the data mapping process used to drive the real-time statistical displays. With additional enhancements, SIFT may be used as general statistics generation, collection, and display tools for communication system capabilities. (Author)

83.096

Kirkwood, V. et al.; **The Land Potential Data Base for Canada: Users' Handbook,** microlog # 83-3876/1, (Agriculture Canada, Research Branch) 1983.

83.097

Kirkwood, V. et al.; **The Land Potential Data Base For Canada: User's Handbook,** (Research Branch, Agriculture Canada) 1983.
Location: 05.

83.098

Colwell, Robert N. (Ed.); American Society of Photogrammetry. **Manual of Remote Sensing 2nd edition. Theory, Instruments and Techniques (VOL. 1). Interpretation and Applications (VOL. 2),** (American Society of Photogrammetry) 1983.

83.099

Grosky, W.I.; Jain, R.; **Optimal Quad-trees for Image Segments,** (in: IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol.5, no.1) 1983, January pp.77-83.

83.100

Douglas, David H.; **The XYNIMAP Family of programs for Geographic Information Processing and Thermatic Map Production, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee For The Sixth International Symposium On Automated Cartography) 1983 pp.2-14.

Abstract: The XYNIMAP family of programs offers a wide range of cartographic and geographic information processing capability including XYNIMAP itself, an interactive digitizing and graphic editing system, BNDRYNET and CONSURF, programs for reorganizing data topology, and XYNIDRAW, XYNISYM, and VUBLOK, which are thematic mapping programs. Collectively the system illustrates what can be done utilizing timesharing and communication speeds which are considered as minimal for interactive text editing and other asynchronous remote terminal operations. The system was designed for all sorts of pilot and demonstration projects, to be a robust and flexible tool for undergraduate teaching, and as a research tool for geographic and cartographic projects that might be undertaken by faculty members who are not specialists in this field

Location: 01.

83.101

Broekhuysen, Martin; Dutton, Geoffrey H.; **Conversations with Odyssey, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.15-24.

Abstract: Odyssey is a software system for the management, analysis and display of geographic information. It consists of nine Fortran programs, each devoted to one or more related tasks, including maps digitizing, editing, transformation, verification,overlay and cartographic display. While the ensemble of tasks the system can perform is large, ODYSSEY can be understood and operated by relatively untrained individuals. This is no accident: man-years were spent in the development and refinement of command proctocols and dialects which are simple to understand and consistent in the way they operate. This paper concentrates on describing the user command language: its logic, features and uses. Following a discussion of philosophy of control embodied by ODYSSEY's language system, command language syntax is summarized, with examples (principally from the POLYPS mapping program) demonstrating both the consistency and fexibility built into the language system. Examples of user-program interaction are presented which illustrate the options available for controlling ODYSSEY programs and the forms of feedback presented to users, including informational, warning and error messages. Finnally, command procedures are discussed, concluding with a description of ODYSSEY's interactive tutorial capability, a relatively simple extension of command file processing which provides users with on-line instruction upon demand, at the same time that they are in command of the program.

Location: 01.

83.102

Li, Shiu-Yeu.; Morrison, John; **Small Area Mapping System (Sam), Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.44-53.

Abstract: The Small Area Mapping System is designed to meet the information requirements of decision makers responsible for formulating regional industrial policies and programmes in Canada. In the first part of this paper, the institutional environment in which the system was conceived, developed and implemented is described. The potential role of this system in the policy making process is illustrated, followed by highlights of its development history, with particular emphasis on the importance of interaction between development staff and users. The next section focuses on the characteristics of the system, containing a detailed description of User Interface, Data Linkages and Geograhic Data Base components. This is followed by an overview of system capabilities. The paper concludes with an outline of possible future enhancements.

Location: 01.

83.103

Moellering, Harold; **Designing Interactive Cartographic Systems Using The Concepts Of Real And Virtual Maps, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee For The Sixth International Symposium On Automated Cartography) 1983 pp.53-64.

Abstract: Interactive cartographic data processing systems can be designed for many different kinds of purposes. Most modern systems are organized such that they can accomplish several kinds of tasks. When one begins to lay out the design of an interactive cartographic system, one must explicitly recognize and reference different states of cartographic information in a systematic way. This can be accomplished by utilizing the concepts of real and virtual maps. The operations of such systems continually change the state of cartographic information which can be understood as transformations between various kinds of real and virtual maps. One can then combine the referencing of transformations between various states of cartographic information together with the standard modular designs of cartographic system organization. This paper is an extension beyond the earlier work of the author and will discuss how this can be accomplished. It will also show the advantages of such a strategy as an aid to conceptual understanding and as a tool to help the cartographer more effectively design such systems.

Location: 01.

83.104

Shirtliffe, Glenn Mitchell; **Design Of A TELIDON Based Image Analysis System (TELIAS), Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium On Automated Cartography) (The Steering Committee For The Sixth International Symposium On Automated Cartography) 1983 pp.65-74.

Abstract: The merits of digital image analysis systems in remote sensing have been well documented in the literature. The major factor that has served to limit the diffusion of digital image analysis systems throughout the research community has been that of cost. The objective of this project was to create a digital image analysis system that would provide reasonable results at the least possible cost, using equipment already available in most computing/research facilities. The TELIDON Image Analysis System (TELIAS) is a CP/M based system that presents digital imagery on TELIDON display devices. The interaction model is one between operator and a TELIDON display terminal, using a microcomputer as the interface. TELIDON, specifically North American Presentation Level Protocal Syntax (NAPLPS), was chosen as the base for graphic presentation primarily because of cost considerations.

Location: 01.

83.105

Edelen, Robert B.; **The Future In Terrain Elevation Data Processing At the Defense Mapping Agency, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium On Automated Cartography) (The Steering Committee For The Sixth International Symposium On Automated Cartography) 1983 pp.109-116.

Abstract: Since 1968 the Defense Mapping Agency (DMA) has been actively engaged in the production of Digital Terrain Elevation Data; Initally to support plastic relief mapping, then to support "lines of site" studies, and more recently to support advanced weapons systems, simulators and navigational devices. With the increasing variety of users for Digital Terrain Elevation Data (DTED), the requirement for greater quantity, accuracy and diversity of DTED has likewise increased. To help meet these challenging production requirements of the future, DMA has awarded a major contract for development of the Terrain Edit System/Elevation Matrix Processing System (TES/EMPS). The TES/EMPS will provide state-of-the-art mini computers, array processors and specially developed software to perform complex data transformation, interpolation, merging and discrepancy detection functions. The TES/EMPS work stations combined with mini computers and graphics processors, will provide advanced graphic displays

and editing capabilities to perform interactive error correction, panelling and validation functions. All work flow through the system will be managed by the sophisticated job and file management software. The TES/EMPS will be installed at DMA in December 1983 and will perform all processing of DTED collected from photographic and cartographic sources.
Location: 01.

83.106
Read, Chung Hye; **Hydrographic Survey Requirements System (HYSUR), Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.127-134.

Abstract: The Defense Mapping Agency (DMA) has no automated system with which to determine the survey precedence of the 8.2 million square nautical miles of worlwide coastal areas which require hydrographic surveying. In response to this vast requirement, the DMA Hydrographic/Topographic Center (HTC) is developing the Hydrographic Survey Requirements System (HYSUR). This software system will enable managers to make timely, systematic decisions, thereby enhancing the utility of the Naval Oceanographic Office (NAVOCEANO) survey vessels. This report discusses the practical applications of this system which will:

6. identify hydrographic data deficiency areas.
7. establish a rank order for required survey areas considering economic, political, military, and physical factors.
8. provide an alternative planning capability to answer management-level "what if" questions, such as "What if a given route is blocked?", or "what if merchant traffic is disregarded?".
9. produce coastal survey requirements based on the results of the ranking procedures, available resources, and estimated cost.

Location: 01.

83.107
Kinnear, Christine; Meixler, David; **Underlying Requirements And Techniques Of A Geographic Data Base, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium On Automated Cartography) (The Steering Committee For The Sixth International Symposium on Automated Cartography) 1983 pp.177-178.

Abstract: The Geography Division of the U.S. Bureau of the Census has the responsibility of providing the geographic support for all censuses and surveys conducted by the Bureau. This support includes geographic reference file creation and maintenance, address geocoding, and map production. Traditionally, geographic information to support these functions has not been centralized, instead, each function has been self-supporting. For the 1990 Census and subsequent operations, the Bureau is committed to developing an integrated geographic data base that will support these separate but related functions. This paper presents the current status of the development of the Topologically Integrated Geographic Encoding and Referencing (TIGFR) system. It reviews the system's evolution from theory, through experimental implementation during the 1970s as ARITHMICON, and production testing during the early 1980s as TIGER, to its current state. This presentation includes an overview of the cartographic, address geocoding, and tabulation requirements for the 1990 Census, and a discussion of the goals of the Bureau's prototype geographic data base system. Finally, the underlying data structure of the system is presented, and the techniques used to create and support the current system are described.
Location: 01.

83.108

Wilson, Paul; **Mulitiple Data Structures in a Regional Data Base, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.221-229.

Abstract: Early geographic information systems were limited in the ability to represent spatial data in different ways. Advances in hardware and software have made possible a greater degree of flexibility, allowing multiple data structure to be used in a single application. A higher level of data integration is possible when the limitations on data representation are removed. A regional data base (BASIS in the San Francisco Bay Area) is used to illustrate these concepts. Several BASIS applications, ranging from site-specific analyses to regionwide studies, demonstrate the use of multiple data structures (cells of different sizes, vectors, polygons).

Location: 01.

83.109

Yoeli, Pinhas; **About Cartographic Contouring With Computers, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.262-266.

Abstract: Digital models of height points may serve to define an approximation surface to the true earth's surface or to depict the spatial distribution of other geographical or geological phenomena. A basic distinction between digital models relating to the earth's surface and those depicting thematic phenomena is made. The view is expressed that algorithms for the computer assisted contouring based on digital models should be adapted to the type and character of DMT's at hand and the advantage of the use of "general purpose" contouring algorithms is doubted. Some methodological remarks about the computer assisted generalization of topographical relief are made.

Location: 01.

83.110

McMaster, Robert; **A Mathematical Evaluation of Simplification Algorithms, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six Sixth International Symposium on Automated Cartography) (The Steering Commmittee for the Sixth International Symposium on Automated Cartography) 1983 pp.267-276.

Abstract: A major objective in computer cartography has been the creation of accurate representations of naturally-occurring lines such as rivers, coastlines, and contours. The coordinate data to represent these lines is commonly gathered with digitizers. As a result, the cartographic community has developed an array of line simplification algorithms to eleminate the superfluous data captured when digitizing. Some of the algorithms, such as the nth point and the random point selection routines, have not been developed using sound cartographic principals while others, such as the Douglas-Peucker routine, appear more cartographically sound. By applying two measures of displacement between a digitized line and its simplification, four algorithms have been evaluated. The results indicate that, of the four, the Douglas-Peucker routine produces less displacement between a line and its simplification.

Location: 01.

83.111

Mark, David M.; **Automated Detection of Drainage Networks From Digital Elevation Models, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.288-298.

Abstract: Two algorithm for the automated detection of drainage networks from digital elevation models (DEMs) are described and evaluated. One of these detects points of local upward concavity, while the other simulates runoff processes to predict channel locations. The former algorithm is much faster, but is arbitrary, and is only weakly related to hydrologic processes. The latter algorithm is physically sound, but very costly. Both algorithms have difficulty with DEMs containing pits due to data erros, these problems are alleviated by filtering or smoothing the data before channels are detected. Results and evaluations are presented.

Location: 01.

83.112

Teng, Apollo T.; **Cartographic and Attribute Data Base Creation for Planning Analysis Through GBF/Dime and Census Data Processing, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.348-354.

Abstract: The highly topological structure of the U.S. Bureau of the Census GBF/DIME-file provides a sound base for generating cartographic and attribute data bases for planning analyses. The methodology and procedures for implementing GBF/DIME-maintenance and a DIME-based planning information system in an interactive computer graphics and attribute data base system are discussed. The dynamic linkages between the graphic elements and the attribute data base allow the updating of the street segment attributes at the same time the graphic element is modified. the system also allows a user to extract population summary statistics from census tapes and store it in the attribute files corresponding to the various graphics files. Additional local data can be geocoded, tallied, and loaded to the attribute data base . The attribute data base can be queried, manipulated, reported, and displayed interactively. The system provides the capability to display polygon thematic data by using crosshatches or polygon color fill. The advantages of the system can be summarized as: responsiveness, immediateness, and ease of operation.

Location: 01.

83.113

Moore, W.C.; Chow, W.; **Computer Mapping for Biomass Inventories, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.355-364.

Abstract: The Northern Forest Research Centre is developing a computer mapping capability as part of a Geographic information system for the western and northern region. The initial requirement was to develop a capability for converting forest inventory maps and supporting data to a biomass data base. The location-specific data manipulations for a test inventory map from Saskatchewan are described and evaluated. This is more than just a technical challenge, however, because while experts make maps, nonexperts use them to make policy. The cost-effectiveness of automated reinterpretation of existing data is discussed, as is the adequacy of such reinterpretation. Future requirements for remote sensing and other integrated inputs are also considered. Resource anallysts and policy makers require that quantitative storage, classification, manipulation, and retrieval of location-specific results (as maps and tables) are reliable and available on demand. A complete resource analysis, mapping, and information system must be designed and developed for practical and continuing operations in a clear, timely, accurate, and economic manner. Further developments and operational applications are required.

Location: 01.

83.114

Wiltshire, S.E.; **Flood Estimation in Europe - A Case Study of Applied Digital Cartography, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steerting Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.365-373.

Abstract: A European flood study has prompted the development of a system for automatically deriving various catchment-based indices of climate and physiography. Primary thematic mapping is digitised by a variety of techniques and is translated to values on a 2.5 km data raster. Catchment boundaries are also digitised and their contained areas stored in a raster form so they can be efficiently associated with the thematic data. The use of rastered data, together with a felexible processing system, provides a powerful tool in the development of flood prediction procedures.

Location: 01.

83.115

Mruk, Steven; **Computer Aided Design in Relation to Earthwork Computations, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.384-397.

Abstract: Synercom Technology Inc., a pioneer in state-of-the-art interactive graphic systems, has developed a Route Optimization and Design System called ROADS. This software is general in nature and may be applied to highway design, railroad layout, and site planning. Additionally, ROADS has been used successfully for canal dredging problem and airport runway resurfacing projects. ROADS is the result of fundamental algorithms supplied by Qubit Pty., Ltd., an internationally known Australian engineering firm, and Synercom-developed interactive graphics software. The intent of this paper is to describe ROADS' basic algorithms and file structures. A principal theme throughout this paper is to classify computational steps into three groups: (1) interactive, requiring the use of a graphics workstation; (2) interactive, executable from an alphanumeric CRT; and, (3) compute bound i.e., batch.

Location: 01.

83.116

Stover, Richard; **Automated Database Capture for Cadd, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.398-407.

Abstract: One not so obvious problem with Cadd systems is building a data base. Cadd vendors rarely mention this because, depending on the application, users can spend years to capture a database. During this time period, productive work for which the system was purchased is delayed. This author and others have discussed optical scanning methods for database capture and while some potential solutions exist, the real problems have not been defined. The intent of this paper is to properly define problems which can aid users in selecting systems configurations for their needs.

Location: 01.

83.117

Boss, Daniel; **Application of a Commercial Mapping/Data Management System to Forest Land Management in Maine, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983.

Abstract: Great Northern Paper Company manages 2.4 million acres of forest land in northern Maine. In early 1980, an Intergraph minicomputer-based computer mapping system was acquired for the purpose of building a map based information system. The key to GNP's use of the system is the plan to use map relationships, both for user-friendly retrieval of data base reports and to define data base relationships as required for different reporting purposes. The unique land management problems which have been overcome all relate to the challenges of very complex polygon data with "island" conditions. they include: (1)The need for an efficient data entry system tailored to the entry of complex natural feature polygons and associated attribute data. (2)The need for data display methods which can handle large and complex polygons with "island" conditions to perform thematic patterning, dissolving and merging of reclassified polygon data, and separate display of areas with selected attributes. (3)The need for spatial relations processors which define new data base relationships based on spatial relationships in map elements which are linked to the data base. The first two problems have been effectively solved with systems developed cooperatively by GNP and Intergraph during the past three years. The last is currently being solved. It involves the definition of all classes of relationship between polygonal, lineal, and point type map features. GNP is solving the polygon overlay and intersection problem by using a grid type approach for the analysis of areal data, while maintaining polygonal representation for map update and storage. Processors to define relationships between attributes of points or lines and the attributes of containing polygons are now being developed. These developments will allow full relational data base retrieval from the graphically-linked data base, enabling GNP to meet the planned goals for its map-based information system.

Location: 01.

83.118

Zastrow, Joseph; **EPPL: An Innovative Grid Geographic Information System Language, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges**, (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983.

Abstract: Grid or raster processing techniques are used by many environmental analysis systems for their cost effective capabilities. Minnesota has developed the Environmental Planning and Programming Language (EPPL) for use with its Land Management Information System. EPPL includes spatial analysis commands and multi-variable modeling techniques and contains several innovations that significantly enhance grid cell processing. The language is a translator, or "pre-compiler", which compiles user defined commands into a FORTRAN IV program optimized to only process the desired commands. EPPL data files combine run length and raster storage techniques which optimize storage, affording a 60% reduction in the disk space needed to maintain the Minnesota data base. EPPL also has the capability to mix FORTRAN code or subroutines with the standard commands for maximum flexibility. EPPL is fully interfaced to all major GIS related software capabilities: polygon processing, image processing, and digital elevation modeling. The power of this language allows the Minnesota Land Management Information Center to respond to a variety of request for environmental data in an efficient manner.

Location: 01.

83.119

Brassel, Kurt E.; Kiriakakis, Zissis; **Orthogonal Three-Dimensional Views for Thematic Mapping, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges**, (at: Auto-Carto 6 Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.416-425.

Abstract: A new mapping method for statistical surfaces is proposed. It combines some properties of three-dimensional diagrams, oblique hill shading and choropleth mapping. The model modifies the geometry of a discrete statistical surface consisting of a set of prisms. The slopes of the prisms are modestly tilted, and the new surface is viewed from a vertical viewpoint. Visual effectiveness is improved by using oblique hill-shading. The geometry and construction algorithms are explained, in addition some application problems are discussed.

Location: 01.

83.120

Goldberg, M.P.; Alvo, M.; Karam, G.; **The Analysis of Landsat Imagery Using an Expert System: Forestry Applications, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.493-503.

Abstract: A production rule-based expert system for the analysis of multi-temporal LANDSAT imagery is described. Specifically, the system has been trained to analyze a forested region in Newfoundland, Canada with data acquired over a six year period. The main properties of production rule-based expert systems are first outlined, the various components involved - primitive predicates, derived predicates, goals, the rule base, and the control structure are described. The system developed handles the data in a sequential manner, each step in the sequence corresponding to one image. After classification of the newly acquired image, rules bases upon the present classification, the previous classification, the previous decision, and various measures of confidence (or reliability) are invoked by the data. A new decision results for each pixel. The production rules are supplied by the expert user and can be modified as the need arises. Results are shown to indicate the utility of the expert system.

Location: 01.

83.121

Howarth, Philip J.; Ommanney, C. Simon L.; **Landsat Digital Data for Updating Glaciological Information on Topographic and Glacier Inventory Maps, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.504-513.

Abstract: Landsat provides repetitive coverage of the earth's surface. The technical characteristics of its multispectral scanner make the sensor best suited to the study of large areas at relatively low resolution where there are clear spectral and/or spatial changes which are either permanent or long term. Many changes important for map revision meet the above criteria. In Canada, Landsat visual data are incorporated in the topographic map revision process, not only for mapping change but also in the planning of new aerial photography for revision mapping. In this paper, the need for updating glaciological information on topographic and glacier inventory maps is discussed and the capabilities of Landsat digital data to undertake this task are demonstrated with three examples. On the Steacie Ice Cap, a 5 km advance of the Good Friday Bay Glacier was detected with Landsat. A linear contrast stretch enhancement was used in the mapping of the terminal zone of the Kaskawulsh Glacier and the change in the surface moraine pattern on the Tweedsmuir Glacier was also recorded. It is concluded that a digital data base using DICS imagery would provide easy and rapid updating of glacier margins for topographic and glacier inventory maps.

Location: 01.

83.122

Puittinen, D.; Kesik, A.B.; **Enhancements & Classifications of Landsat Data for the Ecological Resource Survey & Mapping of the Aishihik Lake Environmentally Significant Area (ESA),YK Can., Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.514-523.

Abstract: Enhancements and classifications of the Landsat digital data for the Aishihik Lake Environmentally Significant Area (ESA) have been analysed as the supporting techniques for the biotic survey and mapping. Digital techniques provide opportunity for dynamic manipulation of data anD for more effective interactive interpretation. Enhancement techniques, particularly linear contrast stretch, seems to be the most useful for the objectives and requirements of the

ABC resource survey.
Location: 01.

83.123

Neville, R.A.; Till, S.M.; McColl, W.D.; Gibson, J.R.; **A High-Accuracy Airborne Digital Line Imager, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges**, (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.536-540.

Abstract: An advanced airborne pushbroom scanner, MEIS II, has been developed and operated by the Canada Centre for Remote Sensing. The imaging scanner uses charge-coupled device linear array detectors, and covers the near infrared and visible spectral regions, spectral bands being readily selected by means of optical filters. MEIS II has a low noise equivalent radiance and high spatial resolution, and its real-time data processor provides radiometric gain and offset corrections, together with geometric and aircraft roll compensation. The sensor shows an improvement in noise equivalent radiance of at least two orders of magnitude when compared to the rotating-mirror scanner presently in use at CCRS as well as improvements in the geometric fidelity and spatial measurements, with interchannel registration to within a fraction of a pixel.

Location: 01.

83.124

Chamard, Roger R.; **Analytical Plotter for Facility Management Systems Data Acquisition, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges**, (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.541-548.

Abstract: Modern facility management (FM) systems required data properly structured in a data bank for use in interactive displays, reports, and hard copy graphics. Acquiring data for these systems requires a very large amount of resources. In most FM systems the largest single cost element has been the data acquisition and the Automated Mapping (AM) phase. This phase, although expensive, is not always the most thoroughly thought out. As a result, the data in this basic structure package is of variable accuracies, comes from different data sources that are often not even tied to the same geodetic base, and are of different or unknown positional accuracy. FM systems can only be as good as the primary data in the AM system. The remaining of this presentation will dwell on base data (AM) requirements and effective methods of acquiring the data.

Location: 01.

83.125

Reed, Carl; **Computer-Assisted Photo-Interpretation, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges**, (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983.

Abstract: During the last two years, a new technology that marries computer technology with traditional photo-interpretation has been evolving. Still in its infancy, this evolution promises to have a considerable impact, especially in large mapping agencies, on how mappable information is collected, processed, stored, and displayed. Called CAPI, short for Computer Assisted Photo-Interpretation, digital processing, analytical photogrammetry, artificial intelligence, refresh graphics, voice interaction, and image processing hardware/software are being merged. The goal of this merger is to have the computer take the first cut at interpreting a stereo pair and then have the trained interpretor interactively rectify/correct the results of the computer's effort. This paper will focus on the current state of this technology. In addition, projects using the first generation of CAPI will be discussed to show how the computer-interpretor synergism can be extremely effective. The paper will conclude with a discussion of current and future research on CAPI.

Location: 01.

83.126

Ozone, Mohammad Id; **Limitations of Landsat Imagery for Thematic Urban Mapping, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.561-562.

Abstract: In a research project, at Kuwait Institute for Scientific Research, for monitoring the expansion of Kuwait city during the seventies, thematic urban maps are compiled on overlays scale 1:100 000 from a LANDSAT scene. Themes of interest are 'thoroughfares, urban areas, uninhabited areas and land cover'. Compiled features are field identified as well as compared to maps valid at the date of the scene, and found satisfactory. The overlays are also superimposed, and an integrated city map is reproduced to the same scale 1:100 000. Thematic maps 1:60 000 and larger are endeavored. Such relatively large scales are found not to meet the requirements of the project, due to poor resolution (80 m) of LANDSAT 1 imagery available for that period. Both scales are compared indicating deficiencies and anomalies on the larger scales. Analysis of the deficiencies and anomalies appearing on enlargements of old generation LANDSAT scenes shows that they can be eliminated on the new generation LANDSAT 4, having 30 m resolution thematic mapper with the addition of the thermal band and should meet most of the requirements needed for efficient monitoring of the expansion of the city.

Location: 01.

83.127

Bradley, D. Ross; **Computer-Assisted Mapping for the Census of Canada, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.570-579.

Abstract: The Census of Canada which takes place every five years is a huge undertaking. To carry out the Census in an orderly fashion requires a map as an aid to each one of the 35,000 to 40,000 Census Representatives (enumerators), to ensure an exact and complete coverage of questionnaire drop-off. The Census must publish the results of its findings, and since these are made available at a variety of geographic areas, reference maps are a necessity so that their boundaries can be identified. Results are also portrayed in thematic maps, which are provided as an alternative format to the tabular display of data. The computerization of census collection maps, reference maps and thematic maps is well underway at Statistics Canada.

Location: 01.

83.128

Rodrigue, M.; Thompson, L.; **The Availability and Use of Digital Topographic Data, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.580-587.

Abstract: The difficulty experienced in identifying, positioning and depicting terrain features from spectral digital data has precipitated a need for the photogrammetrically prepared digital data base. Data bases of this type are currently produced by the Defense Mapping Agency (DMA) and the United States Geological Survey (USGS). Because of the highly volatile state of this developmental technology, considerable confusion exists in the minds of the consumer as to what data is at his/her disposal. This paper discusses the types of products available while explaining the content, format and accuracy of each. Issues concerned with reading the tapes are addressed, and several examples are given showing how the data may be employed in topographic and civil engineering problems.

Location: 01.

83.129

Maher, Robert V.; Colville, David; Rigby, Douglas; **Two Way Data Transfer Between Aries Image Analysis System and Arc-Info Geographic Information System, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.588-597.

Abstract: Nova Scotia Land Survey Institute has Aries II image analysis software from DIPIX Systems Ltd. residing on a LSI 11/23 processor and also ARC-INFO geographic information system from ESRI residing on a PRIME 550 processor. These computing resources support diploma programs in Remote Sensing and Scientific Computer Programming. To better utilize the computer resources, software has been developed to permit transfer of data on magnetic tape between the two systems. The data transfer is effected in raster format, although the ARC-INFO system allows conversion between polygon and raster file formats. This two way transfer has several advantages: it permits use of input and output devices on both processors; it allows analysis of map data with satellite data on either processor using the software tools of that environment. Educationally, it has developed an understanding of the file structures in the Aries II and ARC-INFO systems within their respective hardware environment.

Location: 01.

83.130

Goodenough, D.G.; Plunkett, G.W.; Palimaka, J.J.; **On the Transfer of Remote Sensing Classifications into Polygon Geocoded Data Bases In Canada, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.598-606.

Abstract: In order to facilitate the updating of geocoded data bases with timely resource information, a standard format for polygon data was defined in 1979 through the efforts of the Spatial Data Transfer Committee (SDTC) (Goodenough et al., 1979). This format has been adopted as a standard by four Canadian federal goverment departments, the LANDSAT Ground Station Operations Working Group (LGSOWG) and several provincial agencies in Canada. One of the objectives of the SDTC was to demonstrate the two-way transfer of data between the Canada Centre for Remote Sensing (CCRS) of Energy, Mines and Resources Canada and Lands Directorate of Environment Canada. This paper describes the efforts to accomplish that objective, notes the successful rasterization at CCRS of polygon data from Lands Directorate and explains the remaining topological problem which prevents the generation of thematic maps from the data after it is entered into the Canada Geographic Information System (CGIS) data base at Lands Directorate. The limitations of the software developed for this application are described and our future plans in this area are outlined. The successful transfer of SDTC Format data from CCRS to Statistics Canada, which is fully described in a companion paper (Korporal, 1983) is noted.

Location: 01.

83.131

Korporal, Kenneth D.; **A Demonstration Transfer of Remotely Sensed Data Utilizing the Standard Format for the Transfer of Geocoded Polygon Data, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983 pp.607-615.

Abstract: As part of a graduate research program at Carleton University, a cooperative project to transfer remotely sensed data from the Canada Centre for Remote Sensing (CCRS), Department of Energy, Mines and Resources to a geographic information system at the Geocartographics Subdivision (GCG), Statistics Canada, was undertaken in early 1982. Utilizing ad hoc standards

developed by a committee of federal government departments, the 'Standard Format for the Transfer of Geocoded Information in Spatial Data Polygon Files', a series of increasingly complex files have been transferred and subsequently mapped. LANDSAT Multispectral Scanner (MSS) data was processed, classified and manipulated. Vectorization processes and special software to create the standard format transfer files were developed by CCRS (as described in a companion paper by Goodenough et al, 1983). Software interfaces were developed at GCG to facilitate use of the data in GIMMS, a comprehensive geographic information mapping system. Subsequent processing produced high-quality thematic maps and analytical graphics.
Location: 01.

83.132
Nyerges, Timothy L.; Smyth, C. Stephen; **IGDMS - An Integrated Geographic Data Management System, Volume II - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto 6 - Sixth International Symposium on Automated Cartography) (The Steering Committee for the Sixth International Symposium on Automated Cartography) 1983.
Abstract: Many references in the geographic information systems literature report special requirements for geographic data management that are not fulfilled by business data management system software packages. Although business data management systems can be used to manage geographic data, the majority are not well suited to the task due mostly to single data model conceptions as well as a lack of storage structures for efficiently handling continuous geographic space. The World Integrated Geographic Data Management System created by Smyth Associates, Inc. has been developed specifically to support geographic data management. The system is composed of four sub-system data managers: quad tree, simplex, relational, and unstructured. Rather than forcing an analyst to view the solution to a problem in terms of a single data model, a choice of data model(s) can be made most suited to the data. The sub-systems are described and application examples are cited.
Location: 01.

83.133
Finkel, Lawrence D.; **Software Tools for Microprogrammed Graphics Processor Design,** (at: Graphics Interface '83 at Edmonton, Alberta) 1983 pp.1-4.
Abstract: As bit map display systems strive for higher resolution, the ability to maintain a high bandwidth update rate is constrained by the need to refresh the screen. In order to make greater use of the available update memory cycles, a microprogrammed graphics processor, the BitMover, is being designed to execute high speed pixel calculations. Standard microprocessors are too slow to meet the design goals of this project. Controlling the BitMover requires a horizontal microinstruction word of approximately 94 bits is required. Debugging microprograms at the hardware level with a microinstruction format of this size is difficult and costly. To circumvent this, software has been written to simulate the execution of microinstructions. It consists of a series of software routines in which the chip inputs and outputs comprise the parameters passed to the routines. A graphics mode has been implemented that eases the debugging process.
Location: 01.

83.134
Baleshta, T.; Harron, B.; Shlien, S.; Takikawa, K.; **A Low Cost Image Compression Test Bed System,** (at: Graphics Interface '83 at Edmonton, Alberta) 1983 pp.5-10.
Abstract: An inexpensive graphics/video raster display processor is described. The system consists of an M6809 microprocessor with 96K high speed memory, 3 D/A converters, 12-bit ALU's and a crystal oscillator. The picture is stored in raster memory in standard Y,U,V components used by the European television system and converted to R,G,B during frame refresh.
Location: 01.

83.135

Guangnan, Ni; Tanner, Peter; Wein, Marceli; Bechthold, Grant; **An Algorithm for Generating Anti-Aliased Polygons for 3-D Applications,** (at: Graphics Interface '83 at Edmonton, Alberta) 1983 pp.23-31.

Abstract: An algorithm for generating anti-aliased polygons is described. The algorithm is simple, but powerful, combining color blending, Gouraud shading and Z-buffer hidden surface removal. A test bed has been constructed which consists of a Versabus M68000 computer (the graphics processor) and a custom interface between the M68000 and the frame buffer of a raster display. Written in "C", the package for generating anti-aliased polygons performs all calculations on a line segment basis rather than pixel basis. This requires less memory and can thus be moved to smaller systems. The prototype test results indicate that a higher graphics performance can be achieved on inexpensive systems by this algorithm and implementation.

This paper also suggests an alternative to the Red/Green/Blue color representation normally used in color displays by storing intensity and two normalized color components to simplify the calculation involved in anti-aliasing, color blending and shading.

Location: 01.

83.136

Hoskins, W.D.; McMaster, G.E.; **The Design of Interactive Systems for the Creation of Precision Graphic Primitives,** (at: Graphics Interface '83 at Edmonton, Alberta) 1983 pp.35-38.

Abstract: The widespread availability of inexpensive microcomputers with a medium resolution graphics capability, enables the user to imagine the creation of program systems which have the capability of using large sets of non-standard characters such as the Greek alphabet, Cyrillic or Gothic character sets, to display data, text or program results on the graphics screen.

An early approach to obtaining alternative character sets via modification of standard hardware is outlined.

The subsequent design, implementation and use of a program system is examined and the appropriate interaction and state transition descriptions of the systems are detailed.

Location: 01.

83.137

Magnenat-Thalmann, Nadia; Larouche, Andre; Thalmann, Daniel; **An Interactive and User-Oriented Three-Dimensional Graphics Editor,** (at: Proceedings Graphics Interface '83 at Edmonton, Alberta) 1983 pp.39-46.

Abstract: HORIZON is a general-purpose three-dimensional graphics editor. It permits to create three-dimensional diagrams, to modify them by geometrical transformations and to assemble them to obtain a complete drawing. The drawing can be stored on a file; later, one may retrieve it for further modifications, or request a hard copy.

HORIZON is strongly user-oriented. It is easy to use even by persons who are not familiar with computer science. The user communicates with the editor by a set of simple commands, in a simple and efficient way. The editor provides various guiding messages and feedbacks to the user. Thus, a session of HORIZON is a friendly dialogue between user and editor.

HORIZON allows the user to define interactively any kind of projection. The visual parameters definition commands are compatible with those defined in the GSPC Core System. Diagrams may be created in three ways: by direct graphical input with the cursor, by placing a diagram from a catalog area into the diagram area or by combining existing diagrams. Combinations can be made by linking corresponding vertices of two diagrams or by forcing two diagrams to have a common edge. 3D graphical input is only available in a standard projection, which is a cavalier projection.

HORIZON is implemented in the MIRA-3D language, a graphical PASCAL extension based on abstract graphical types. HORIZON is mainly used in 3D computer animation.
Location: 01.

83.138
Yan, Joel; Bradley, D. Ross; **Computer-Assisted Mapping for Census Collection - Application Experiences,** (at: Graphics Interface '83 at Edmonton, Alberta) 1983 pp.147-154.

Abstract: The Census of Canada, often referred to as the largest peacetime operation carried out by the Government of Canada, takes place once every five years. Its objective is to count all persons living in Canada at their usual place of residence on Census Day. To carry out a task like this requires some 35 to 40,000 census representatives (enumerators) to drop off questionnaires to about 10,000,000 households during a very short but specific time period. To ensure an orderly coverage, maps must be provided to census representatives so that precise geographic areas are covered once and only once throughout the entire land mass of Canada. For the 1981 Census, some 300 collection maps were successfully produced using a prototype computer mapping system. Given promising results, census management approved the development of a production system for computer-assisted mapping, with the intention of producing about 8000 enumeration area maps for the 1986 Census.

This paper describes the computer-assisted mapping system being developed, and application experiences from the 1981 census and a volume pilot study conducted in January 1983.
Location: 01.

83.139
Nagy, George; **Geographic Applications for Satellite Data,** (at: Graphics Interface '83 at Edmonton, Alberta) 1983 pp.311-312.

Abstract: Computer graphics, pattern recognition, and image processing are essential ingredients in the design of systems for utilizing remote sensing data for geographic purposes. The number and quality of satellite imaging sensors is increasing steadily. Thousands of specialized systems for geographic data processing are in current use to help us cope with the resourcerelated social and economic problems facing us. Some digital terrain models encompass the entire globe. Many countries are developing integrated planning systems. Smaller units of government struggle with databases for transportation networks, land-use, water and mineral rights, soil-type, or recreation areas. Even small towns are rationalizing and computerizing their cadastral records to augment tax collection. The direct and only mildly distorted view of the Earth afforded by satellite imaging systems provides a valuable source of up-to-date information for many of these endeavours.
Location: 01.

83.140
Milton, L.E.; Milton, J.M.; **Elements of Reliability Modeling for Environmental Planning Systems, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.11-26.

Abstract: Over the past few years there has been a growing concern between planners who use natural resource data and inventory agencies that create the data, over accuracy, scale, and use of information. This concern applies particularly to automated systems for data interpretation or planning, where large quantities of data are used, and where the trend towards rapid interchange of information is further separating the planner from the personal advice of the creator of the data.

Inventory agencies are seen to be responding by developing accuracy documentation for individual packages of information. The logical role for the planner is to develop analagous procedures to ascertain and document reliability of information synthesized from multiple data sources. This paper discusses several major requirements and concepts for reliability modeling systems, including 'data audit trails', 'levels of combination', and 'reliability standards'. Reliability of synthesized information is shown to be heavily dependent on natural association of data variables and parameters.

Location: 01.

83.141

Barr, MacDonald; **Standards for Cadastral Survey Control in the Space Age, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.27-38.

Abstract: Maintenance of a survey control network for each county-level cadastre, consisting of monumented control points relatively convenient to all parts of the county, has been recommended as a standard service to be sponsored by state and local governments. The cost of this service is substantial, especially if it is tailored to the half-mile intervals of the Public Land Survey System, and in rural areas could comprise over two-thirds of the cost of establishing a multipurpose cadastre. However, new technologies for determining geodetic position by electronic readings from satellites can provide the necessary reference points for cadastral surveys at high levels of precision, using only one or two base reference points to serve an entire metropolitan area. Local governments are now in a position to ask for more complete and accurate cadastral surveys and records of land that is being developed, but also should foster organization of new technical services to provide survey control for those who may need it in their areas.

Location: 01.

83.142

Teng, Apollo T.; **Applying Interactive Computer Graphics and Attribute Data Base Techniques to GBF/DIME Maintenance & Census Data Processing, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.53-70.

Abstract: This paper discusses the procedures and benefits of implementing GBF/DIME maintenance and a DIME-based planning information system in an interactive computer graphics and attribute data base system. Using a standard GBF/DIME data tape, the system generates graphic files representing the streets, the census blocks, the census block groups, and census tracts. All the relevant information contained in the GBF/DIME tape is also extracted and stored in a data base file which can interact with the street graphic file on-line.

Working in an interactive environment, the creation, updating, and extention of the GBF/DIME files are immediate - no turnaround time is involved. The linkages between the graphics data base and the nongraphics attribute data base allow the updating of the street segment attributes at the same time the graphic element is modified.

The same system also allows a user to extract population summary statistics from Public Law 94-171 census tape and store it in the data base files corresponding to the census tract, block group, and block graphics files. Additional local data can be geocoded and loaded to the attribute data base.

The attribute data base can be queried, manipulated, reported, and displayed interactively. The system provides the capability to display polygon aggregate data by using crosshatches or polygon color fill.

The advantages of the system can be summarized as: responsiveness, immediateness, and ease of operation.

Location: 01.

83.143

Dakan, A. William; **Geographic Data Bases in the Microprocessor Environment, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.71-82.

Abstract: Regardless of the increasing size and speed of microprocessors, there is an upper limit to any application area. The paper will discuss how, by disaggregating the tasks involved in developing a geographic information system, the range of a system can be extended. Transfer of data from subsystem to subsystem is facilitated by the use of text files.

Location: 01.

83.144

Kroll, Peter; Wright, Jeff; **SLIMS - A Microcomputer-Based Information Management System for a Particular Cross Regional Comparison Application, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.83-94.

Abstract: The State and Local Information Management System (SLIMS) is a microcomputer software system developed for the Northeast-Midwest Institute, an organization that provides research and analysis on federal policy for federal, state, and local governments. SLIMS automates the Institute's previously manaul data maintenance system by using a microcomputer-based integrated data entry and table generation system. Considerations in developing the system included working within the constraints of a small-scale computer while exploiting its advantages, ease of use by data entry personnel and policy analysts, conformance to the Institute's particular application, and system reliability. The design and implementation of the system has been successfully integrated into the Institute's operation.

Location: 01.

83.145

Loch, Roland; **MINI-KAT: A Low-Cost Interactive Graphics System, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.95-102.

Abstract: The present state of automation in urban and regional planning in West Germany, to some degree representative of Western Europe, is very modest except for a few centers. The requirements for the system design derive from the reasons for this situation:

- accommodation of the existing processes and practices of spatial planning
- strict orientation to the immediate problems and issues

The system features answering these requirements are essentially:

- the system is operated by graphic actions and commands that are easily learned.
- it provides the necessary functions with a minimum of hardware that may be expanded later when needed.

Performance statistics gathered in the public planning environment confirm the efficiency of this approach.

Location: 01.

83.146

Mings, S. Daniel; Bell, Charles E.; **The Utilization of Interactive Graphics in Travel Demand Modeling, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.103-120.

Abstract: Interactive graphics is a valuable tool in mapping and analyzing urban data in travel demand modeling. As a computer aid to drafting, interactive graphics creates a link network. As a data management tool, it facilitates data manipulation on traffic flow patterns and future forecasts by displaying related link data in an automated mode. As an analytical aid, it allows maximum flexibility and speed in data access in an easily usable map format.

Location: 01.

83.147

Portner, James; Niemann, Bernard J. Jr.; **Belief Differences Among Land Records Officials & Users: Implications for Land Records Modernization, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.121-135.

Abstract: Numerous groups of governmental and private professionals document, maintain, and use land records at the local level in the United States. The autonomy with which these groups behave in performing these activities has led to a land records system that is duplicative and inefficient. It has also diminished the very usefulness and quality of those land records for land use planning and management.

Research at the University of Wisconsin-Madison has measured the beliefs of individuals from each of eleven groups of land records officials and users statewide, at the local level. Factor analysis was used to reduce the 142 questionnaire items to 14 general themes. Results show significant statistical differences among the importance of such items as resource and jurisdictional records, utility maps, and the general quality and usefulness of existing land records, etc. Analysis shows that officials who must spatially integrate and synthesize records (e.g., planners, zoning administrators) differ with those officials who are only responsible for one set of records (e.g., registers of deeds, abstractors).

This resultant group autonomy remains a severe impediment to land record modernization through the development of a multipurpose land records system (MPLRS). For example, these different beliefs amongst those groups that function at the local level are restraints which affect the ability to communicate to public officials as to the relative importance of various existing records such as geodetic control.

Education targeted specifically to the various groups as a technique for modifying social behavior represents a useful tool for mitigating group belief differences. In doing so, it can diminish the groups' inclination to act autonomously and, perhaps, it can help them develop procedures for behaving in a more collaborative manner in modernizing the current land records system in the United States.

Location: 01.

83.148

Crossfield, James K.; **Developing a County Land Records Management System, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.136-145.

Abstract: Dane County, Wisconsin recently formed an Ad Hoc Committee on Land Records Management. The Committee was asked to (1) develop a long-range plan for a modern land record system for the county and (2) develop options and recommendations for implementation of these long-range plans, including the possible merger of several land record functions into a single Land Records Management Department.

This paper focuses on the mapping and surveying aspects of a modern county land records system. It examines in detail one scenario considered by the Dane County Committee as to how surveying and mapping needs could best be provided in a modern county land record system. The proposed scenario uses an automated computer graphics approach, to be implemented over a period of years. The paper contains a description of the system, an analysis of the costs of current systems that would be replaced, along with the potential savings that the proposed system could generate. A step by step implementation plan for the proposed system is presented and cash flow comparisons for several implementation schemes are discussed.

Location: 01.

83.149

Holloway, Donald P.; **North Carolina's Land Records Management Program: Progress Toward County Cadastres, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association at Atlanta GA, USA) 1983 pp.182-193.

Abstract: Until the late 1970's progress toward modern, multipurpose cadastral maps in North Carolina's 100 counties was, with but a few exceptions, non-existent. Some counties had rudimentary property overlays drawn over out-of-date or inaccurate base maps; some counties resorted to the depiction of land parcels by drawing lines or identification numbers directly onto enlarged aerial photographs; many counties had no parcel maps at all, relying entirely on their tax scrolls, which were based in turn on owners' listings, for the determination of their real property tax base.

In 1977, the State Legislature passed a set of laws which created the N.C. Land Records Management Program (MRMP). Since that time, the progress toward a state-wide system of modern cadastres has been impressive! Providing both technical assistance thru a small staff, and financial assistance thru an annual program of state grants-in-aid, the LRMP has been the impetus and the focus for a minor revolution in county government productivity in North Carolina. Beginning with the total revamping of the county base and cadastral maps, and the assignment of geocoded parcel identifier numbers, then involving all county departments and agencies in the latest IMS procedures with an eventual goal of the computerization of the major part of county records, the LRMP has, in just five years, brought 44 of the state's counties into ongoing plans and contracts for the most modern cadastres and land records systems available. Over the long run, the LRMP projects all 100 counties at the desired levels by 1991. Without the highly standardized and centralized controls and the strong leadership of the LRMP, this progress would not have been possible.

Location: 01.

83.150

Hayes, Edgar E.; Fauquier, John E.; **Organizing the Cleveland Land Data System Around Microcomputers, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.194-208.

Abstract: This paper describes efforts to implement a microcomputer based land data system in the City of Cleveland. It also describes the application of a sophisticated generic software package called SOLIR which runs on TRS-80 Models II, 12, and 16 microcomputers. The project has been deemed successful in its early stages, but there are a number of questions still to be answered.

Location: 01.

83.151

Marinella, Ronald C.; Kindleberger, Charles P.; **St. Louis LRMS - A City-wide On-Line DBMS Which Financed Itself, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.209-224.

Abstract: The St. Louis Land Records Management System (LRMS) began in December, 1980 with a City-wide study of land based information needs. By December of 1982 a land data base was developed, four major applications were implemented and ten agencies were being provided on-line access to land, operations and planning data. A fifth major application was added in May of 1983.

The benefits of this effort run the usual gamut, with one exception; the effort paid for itself - before the final application was implemented.

Location: 01.

83.152

Zouzoulas, Gary; Wei, Tim; **Development of the San Jose Geographic/Mapping Information System, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.263-281.

Abstract: The City of San Jose has been developing a comprehensive geographic information and mapping system for land-use planning and decision making, since 1979. At present, the system utilizes three large mini-computers, one for interactive graphics and the others for modeling, permit tracking and database analysis. Mapping applications are built around a detailed street and parcel map, and a less precise DIME file map. Included are utility mapping, census data analysis, sewage treatment plant impact analysis, transportation modeling, cost revenue impact analysis, and traffic accident and device reporting. Most sub-systems are operational; integration across computers is underway to add graphic capabilities. To date, all graphics and associated database development has been performed in-house. The modeling and non-graphic system work has largely utilized outside consulting services.

Location: 01.

83.153

Hanigan, Dr. Francis L.; **METROCOM: Houston's Geographic Information Municipal Management System, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.323-333.

Abstract: In September 1978, the Houston City Council approved the Department of Public Works Director's request that his department be authorized to embark upon the development of an interactive facility data management system, dubbed (METROpolitan COMmon). In November 1978, the City Council. further authorized the City's Tax Department to participate in this same project.

Since that time, the City's digital graphics/data base consultant has expended 316 man-years in developing the METROCOM Data Base. Of this effort, 121 man-years were devoted to digitizing the data and 55 man-years to system design and software optimization. The METROCOM system recently has been installed in the City Hall and now represents the largest municipal data base of its kind in the USA. This article presents a brief history of the project and discusses some of the many lessons learned.

Location: 01.

83.154

Goerke, Daniel J.; **The Planning Implications of Atlanta's Computer Mapping System, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.355-372.

Abstract: In August 1981, the City of Atlanta began operating a computer mapping system. The effort was undertaken by two city agencies, the Bureau of Planning and the Department of Environment and Streets. This paper examines the system's ability to have both parcel level information and planning maps combined on one computer. A description of both the hardware and software is included in order to fully understand the practical application of the system. Probably the most important aspect of Atlanta's computer mapping system is its potential use of census information. By saving census information available and reproduceable in map form, the Bureau of Planning can access the information in a more useful form. Policy recommendations with regards to the development of the system with census information are presented as well.

Location: 01.

83.155

Douglass, Michael M.; Brooner, William G.; **Initial Appraisals of Thematic Mapper Imagery: New Data Applications for Land Resource Planners & Managers, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.382-390.

Abstract: The successful launch of Landsat-4 on July 16, 1982 signals the beginning of a second generation of earth observation platforms. The new Landsat system features an upgraded instrument package - the Thematic Mapper (TM) sensor, a new data relay system, and improved ground support facilities. The Thematic Mapper is providing higher image resolution, sharper spectral separation, improved geometric fidelity, and greater radiometric accuracy than its Multispectral Scanner predecessor. These factors are significant to land planners and resource managers who are considering the utility of TM data for selected land use, land cover, and related land resource observation and analysis.

Results from preliminary investigations suggest a number of important data characteristics that combine to make Thematic Mapper an attractive tool for regional evaluation analysis and monitoring. The enhanced sensor capabilities, coupled with digital data format, afford land resource planners and managers increased opportunity to perform a variety of image enhancement and analysis techniques.

Location: 01.

83.156

Quattrochi, Dale A.; **Analysis of Landsat-4 Thematic Mapper Data for the Discrimination of Urban Features, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.391-403.

Abstract: The capabilities of Landsat-4 Thematic Mapper data for discriminating urban features have been evaluated using Union City, a small urban center in northwestern Tennessee, and Mobile, Alabama as study areas. This analysis includes a brief discussion of the photointerpretative attributes of the data and an assessment of the computer-implemented land cover classifications that have been derived for each urban area.

Location: 01.

83.157

Peters, Charles T., Jr.; White, K. Preston, Jr.; **The Environmental Advisory Service: Design & Development of a Decision Support System for Local Land Use Planning, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.404-416.

Abstract: The Environmental Advisory Service is a decision support system which assists in the resolution of environmental issues in municipal land-use planning. The purpose of the service is to provide a means for reviewing industrial, commercial, and residential development proposals, in order to alert local planners to any potentially serious adverse environmental impacts. The service is currently being developed and tested by the City of Richmond Department of Planning and Community Development and the Department of Engineering Science and Systems at the University of Virginia.

Location: 01.

83.158

Engelman, Lynn; Fittipaldi, John; **Environmental Technical Information System: A Decision Support System, Decision Support Systems for Policy and Management,** (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.417-427.

Abstract: The Environmental Technical Information System (ETIS) is a computerized information system designed by the Army Corps of Engineers Construction Engineering Research Laboratory to aid Army planners prepare environmental impact statements. ETIS currently consists of three principal subsystems: the Environmental Impact Computer System (EICS), the Economic

Impact Forecast System (EIFS), and the Computer-aided Legislative Data System (CELDS). Other subsystems exist in experimental mode.

This paper will demonstrate the applicability of ETIS to enhance decision making through aiding the entire environmental impact analysis and planning process at either Federal or state level. The utility of ETIS in reducing cost devoted to environmental document preparation while providing systematic and comprehensive procedures, will be addressed. The paper will highlight those discrete areas of document preparation/decision making, in which ETIS can assist and discuss its application as a tool which brings together, within one system, environmental and other economic and physical planning concerns.

Location: 01.

83.159

Dyer, Allan G.; Brklacich, Michael; Bond, Deborah; Smith, Barry; **Recent Advancements to & Applications of A Land Evaluation Model: A Decision Support System for Land Use Policy Analysis & Decision-Makers, Decision Support Systems for Policy and Management**, (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.428-438.

Abstract: Since 1976, a multidisciplinary team of scientists at the University of Guelph has been developing a Land (Use) Evaluation Model (LEM II) to assist planners and analysts in comprehensively evaluating options for the use of land. A procedure for land evaluation has been established, a land-related information base has been constructed, and a computer-based evaluation model has been implemented.

During the past two years, this tool was applied to specific land use issues in Ontario. To address some of these issues, LEM II was modified to include a regional component. To improve the methods of portraying the results of the analysis, links between the tool and the Canada Geographic Information System (CGIS) and the Canada Soil Information System (CanSIS) were developed. These improvements and applications of the tool are outlined in this paper. In addition, the future directions of the research are presented.

Location: 01.

83.160

Croswell, Peter L.; Schneider, William L.; **Soil Loss Analysis with the Kentucky Natural Resources Information System, Decision Support Systems for Policy and Management**, (at: Annual Conf. of the Urban & Regional Information Systems Association, at Atlanta GA, USA) 1983 pp.439-453.

Abstract: Capabilities of the Kentucky Natural Resources Information System have been employed in a statewide analysis of estimated soil erosion in Kentucky. This project was initiated in response to the Environmental Protection Agency's "208" Water Quality Management Program. This program requires the states to carry out erosion assessment as a basis for land use and water quality management planning and decision making. The project utilized geographic modeling techniques and was based on the Universal Soil Loss Equation (USLE). Data compilation and encoding included a statewide Landsat landcover analysis and the digitizing of county, incorporated areas, watershed boundaries, soil units, and rainfall factor information. Grid modeling procedures were used to derive the various factors of the USLE and to carry out the potential and gross erosion analysis.

Location: 01.

83.161

Dangermond, Jack P.; **Science and Geographic Information System (GIS) Technology, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges**, (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983.

Abstract: For years geographers, cartographers and other professionals who work in computer cartography have discussed the details of how automation can provide benefits of increased efficiency, lower cost, and better analysis within the application areas of thematic mapping for planning, resource management, reporting and decision making.

Less acknowledged is the potential of this technology as a support tool for scientific discovery and investigation. This paper outlines a basis for examining the relationship between the GIS technology and Science. It also attempts to distinguish this context as an area worthy of professional endeavors.
Location: 01.

83.162
Meisner, R.M.K.; Kennedy, E.A.; **Alberta Land Information Systems: Concept to Reality, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1982 pp.25-38.
Abstract: In 1981, the province of Alberta concluded a two year study which described the requirements of a provincial Land-Related Information Systems Network. This paper identifies key developments during the past decade and describes in general detail the primary components of the Provincial Network. In this context the Alberta Bureau of Surveying and Mapping and its specific responsibility for the development of the geographical positioning and base mapping system is discussed. Some elaboration is given on the digital mapping data bases being developed, including preliminary results obtained using laser scanning technology.
Location: 01.

83.163
Aangeenbrug, Robert T.; **Geographic Information Systems: New Technologies and Uses, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983.
Abstract: This paper examines the impact of computer graphic technological trends on the use of geographic information systems. A classification of the types of geographic information systems is proposed, and recommendations for research and development are suggested. Examples of recent developments will be used to illustrate each recommendation.
Location: 01.

83.164
Crain, I. K.; MacDonald, Connie L.; **From Land Inventory to Land Management: The Evolution of an Operational GIS, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.41-51.
Abstract: Virtually all long-lived information systems, whether spatial or not, proceed (by intent or by unconscious incremental change) through a characteristic evolution from a simple data bank - an inventory tool, to incorporate complex retrieval and statistical processing - an analysis tool, and finally to a system involving modeling and complex decision support capabilities - a management tool. This evolution is evident and still going on in the world's oldest operational geographic information system - the Canada Land Data System (CLDS). The system began with the specific intent of serving the needs of the Canada Land Inventory - to store very extensive and fairly detailed data on the land use potential of Canada. This initial goal having been achieved, increasing demands were placed on the system to explore data and spatial relationships within this huge data bank, and to provide insight for land resource scientists into more localized and specialized concerns - in short, an analysis capability. The CLDS is now entering the third phase of evolution to meet the inevitable demands as a land planning and management tool. The implications of this are mainly: increased user access and interactivity with

existing data, forecasting, planning and modeling capabilities, enhanced variety of display outputs, ability to service non-expert users locally and interactively for small-area data sets in a land use planning setting.

Location: 01.

83.165

Cowen, David J.; **Rethinking DIDS: The Next Generation of Interactive Color Mapping Systems, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.53-58.

Abstract: The Decision Information Display System (DIDS) was a highly touted statistical mapping system designed for use by the highest level of decision makers within the federal government. On the basis of an evaluation of a major pilot study conducted in South Carolina between 1980 and 1982, DIDS was found to have several shortcomings that prevented it from reaching its full potential as a decision support system. This paper examines the general lessons that have been learned from the DIDS experience in terms of user behavior, data base organization and both hardware and software. In addition, it describes the functional categories of raster based color mapping systems and illustrates how these have been economically implemented on a hardware system that has been integrated into a general purpose data processing network. The next generation of mapping system was developed to incorporate the full capability of color frame buffer hardware to perform the following operations:

1. statistical mapping of polygons
2. manipulating and displaying grid or raster data
3. drawing plot files generated on other systems
4. altering and embellishing existing displays with basic computer aided design features.

Location: 01.

83.166

Dangermond, Jack P.; **GIS - Beyond Graphics, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983.

Abstract: For many years there has been a discussion regarding what constitutes a full Geographic Information System.

The widely held view at present is that there are four capabilities that are basic to the functionality of such a system. They are: electronic preparation; entry; analysis; display and management of geographic data held in an electronic form. Each of these categories contains a series of specific generic components that operate on geographic data.

For the buyer of a GIS system there is a need to examine which of these components is really needed, and which systems best perform each of the functions. At present there remains a clear distinction between "graphic systems" which are built around the interactive display and graphics management technology, and those systems which emphasize the full spectrum of GIS components. The state of GIS technology is gradually changing in 3 ways:

1. The suppliers of interactive graphics systems are claiming they have full GIS functionality and are attempting to adapt their data base structures to accommodate the types of entry, analytic and management functions required of such systems.
2. The GIS system manufacturers are moving in the direction of designing and developing better interactive display capabilities to supplement their strong emphasis to performing analytical work.
3. Hybrid and, in most cases, duplicate systems are developing where a common processor is host to both analytic and graphics software.

A list and definition of GIS generic functions is presented, as well as the current industry trends and their implications.

Location: 01.

83.167

Moore, Heather; **The Impact of Computer Technology in the Mapping Environment, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.60-69.

Abstract: The introduction of computer technology has had a tremendous impact on the traditional mapping environment. In addition to the vast changes in instrumentation and methodologies, a very different design and utilization philosophy has surfaced with respect to project mapping.

The technology has enhanced the capacity for storage, transfer, integration, manipulation and analysis of geographic data. This has affected the way the map producing community functions as a profession, operates as a business, evolves as a science and utlimately the way in which it presents geographic information to the end user.

Location: 01.

83.168

Starr, Lowell E.; McEwen, Robert B.; **The National Digital Cartographic Program of the U.S. Geological Survey, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.89-99.

Abstract: The National Mapping Division of the U.S. Geological Survey is actively adopting computer technologies to support its mission of collecting and distributing cartographic and geographic data for the United States. Digital methods are becoming increasingly important in the mapmaking process, the demand is growing for digital data bases that link base category data to other physical, social, and economic data. Production of data for a national digital cartographic data base at 1:24,000-scale is well underway and complete small-scale planimetric coverage of the United States has recently been completed at 1:2,000,000-scale. During 1983 work was initiated in cooperation with the Bureau of the Census to produce an intermediate-scale data base at 1:100,000-scale.

The Department of the Interior established a committee to coordinate all digital cartography activities being conducted by its component bureaus. Also in 1983 the Office of Management and Budget issued a memorandum requiring Federal agencies to coordinate digital cartographic activities to improve the use of such data and provide a framework for proper management. The U.S. Geological Survey has also established a procedure to develop digital cartographic data standards for issuance by the U.S. National Bureau of Standards, and as the first step in that process, several of the in-house documents that have been developed for collecting and managing digital cartographic data have been published.

Location: 01.

83.169

Hanigan, Dr. Francis L.; **Metrocom: Houston's Geographic Information Municipal Management System, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.110-120.

Abstract: In September 1978, the Houston City Council approved the Department of Public Works Director's request that his department be authorized to embark upon the development of an interactive facility data management system, dubbed METROCOM (METROpolitan COMmon). In November 1978, the City Council further authorized the City's Tax Department to participate in this same project.

Since that time, the City's digital graphics/data base consultant has expended 316 man-years in developing the METROCOM Data Base. Of this effort, 121 man-years were devoted to digitizing the data and 55 man-years to system design and software optimization. The METROCOM system recently has been installed in the City Hall and now represents the largest municipal data base of its kind in the USA. This article presents a brief history of the project and discusses some of the many lessons learned.

Location: 01.

83.170

Jaksic, Z.; Van Wijk, M.C.; **The Prototype Land Information System for the Cadastral Pilot Project in Colombia, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.128-137.

Abstract: A prototype land information system is being developed for Colombia as part of a pilot project which is carried out jointly by the National Research Council of Canada (NRCC) and the Instituto Geografico "Agustin Codazzi" (IGAC) of Colombia. The pilot study is performed for a 2 000km² test area containing topographical features, land use patterns and soil types which are representative of the entire country. The system components, the on-line photogrammetric information acquisition procedures, the field identification and data collecting techniques, as well as the data bank functions are discussed in the paper. The results of the pilot project will be used to define the specifications for a country-wide cadastral land information system.

Location: 01.

83.171

Boase, P.J.; **From Pencils Through Pulses to Maps Integrating a Digital Mapping System into a Multi-Discipline Organization, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983.

Abstract: Choosing and integrating a computer based mapping system into an organization, especially a multi-disciplined organization such as McElhanney, is a formidable challenge. Each of the three main disciplines of surveying, engineering and mapping have specialized requirements differing from other disciplines as well as a multitude of task oriented requirements within the discipline. The overall requirements of each discipline is examined, some task oriented requirements within the disciplines are illustrated, a brief description of the system hardware/software is provided. The method of integration of the system into the company and into each discipline of the company is examined, specialized applications to accomplish specific tasks are illustrated. Special emphasis is placed on the particular methodology used for the collection, editing and output of digital photogrammetric data in a previously conventional mapping organization dealing with a wide range of client disciplines and their diverse requirements. Outside forces over which the company has no influence but which directly affect the operations of the company are examined and observations made. Some conclusions are drawn and a few thoughts and ideas formulated and offered for comment.

Location: 01.

83.172

Mogg, Marilyn; **Cartographic Potential of the Bureau of Land Management Geographic Information System, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.139-140.

Abstract: The use of geographic information systems in the Bureau of Land Management has increased significantly over the past five years. Major requirements for inventory and planning decisions for managing resources on public lands in short time periods has caused managers and resource specialists

to re-evaluate analysis techniques, resulting in a greater reliance on automated systems.
Location: 01.

83.173
Lee, Y.C.; **A Data Structure for Resource Mapping with CARIS, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.151-160.
Abstract: This paper describes the resource mapping capabilities of CARIS, the Computer Aided Resource Information System. In particular, it outlines the data structure and describes some of the algorithms used to process polygons.
Location: 01.

83.174
Neumann, Daniel E.; **A Digital Cartographic Information Utility, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.161-167.
Abstract: This paper will evaluate the potential of the National Ocean Service (NOS) Automated Information System (AIS) digital cartographic data base as marketable information commodity. The evaluation will stress the mutual benefits that government data base agencies and the public can share. A sampling of a few government cartographic data bases depicts how duplication of data collection and subsequent maintenance can be significantly reduced. Moreover, a wider range of users would be serviced because the digital mode supplements the present paper map or chart dissemination media.

This paper also presents a possible user-source agency interface to make the information cartographic data base a reality. The interface suggested requires a threefold approach. First, released AIS digital test data would have user restrictions by copyright and would require user fees. Second, the selected AIS test data would be made available to a network of depositories with existing digital data maintenance and disposition capabilities. Third, the depositories would provide user feedback to the NOS as well as test data manipulations or non-AIS supplementary data that the users may have.
Location: 01.

83.175
Simpson, R. Larry; **Selecting Digital Mapping Equipment for LRIS, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.168-173.
Abstract: LRIS was seeking an automated mapping system which would meet two basic criteria. The first requirement was that the system produce maps efficiently. The second requirement was that the system be amenable to polygon type manipulation by downstream users of the data. These requirements were initially seen to be in conflict. This document outlines the process used to select a system which met both criteria.
Location: 01.

83.176
Loikow, John D.; Dixon, Donna M.; **The Florida Pilot Digital Production Project - A Cooperative Venture Between the U.S. Bureau of the Census and The U.S. Geological Survey, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.174-175.
Abstract: The U.S. Bureau of the Census is currently planning to use

computer-generated maps both during the enumeration of the 1990 Decennial Census and for publication with the resulting data. These maps will be generated from the cartographic subsystem of the Topologically Integrated Geographic Encoding and Referencing (TIGER) system, a geographic information system which is being developed by the Census Bureau to coordinate all geographic aspects of the next decennial census.

This paper describes the pilot production project of the U.S. Bureau of the Census and the U.S. Geological Survey to collect, encode, and structure 1:100,000-scale digital data for the State of Florida as the first step in creating the cartographic data base. Each task assigned to either the Census Bureau or the Geological Survey is presented in terms of its impact upon the project as a whole, along with a detailed description of the methodology devised to accomplish the task. In addition, the paper serves as an interim report on the progress of the project, and the coordination between these two federal agencies to create this cartographic data base which will be usable for both census and general-purpose cartographic applications.

Location: 01.

83.177

Porter, T. Allen; **Geocartographics - A Graphical Service for Statistical Data, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth International Symposium on Automated Cartography) (The Steering Committee for 6th Int'l Symposium on Automated Cartography) 1983 pp.197-207.

Abstract: Geocartographics services have been available to the Census and other areas within Statistics Canada for over ten years, and have been provided to other government and private agencies on a cost-recovery basis since 1979. Beginning with basic digitizing, plotting and thematic mapping capacities for geo-coding and portraying Census data in 1971, these services have evolved to include complex thematic maps, graphs, maps to support collection of census and survey data, and reference maps for demonstrating the geographic structure of statistical data.

This paper traces the evolution of these products and services, and highlights significant systems acquisition, development and adaptation activities. Current activities, trends and future possibilities are also discussed.

Location: 01.

83.178

Hegyi, Frank; Sallaway, Pam; **Integration of Vector and Grid Data Bases in B.C. Forest Inventory, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983 pp.215-221.

Abstract: The data base of the Inventory Branch, B.C. Forest Service, consists of over 6000 forest cover maps and their descriptive statistics. Since 1978, this data base is being loaded into an Interactive Graphics Design System (IGDS). Although the polygon overlay processor available on IGDS is operating well, production was seriously impacted owing to the magnitude of the data especially when several themes had to be base overlaid. In order to solve this problem, a grid-based thematic overlay technique was developed and details of its application are described in this paper.

Location: 01.

83.179

Arbour, Joseph H.; **Role of a Geographic Information System in the Management of National Parks in the Atlantic Region, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983 pp.222-231.

Abstract: The development of a Natural Resource Management Process within the National Parks Program of Environment Canada has significantly increased the demand to manipulate and rapidly consult comprehensive information sets describing the resources of the parks. Techniques have been developed for the collection and compilation of large hard-copy data sets describing the physical and biological resources in each park. Most of this information is spatial or map based.

The application of computer based technology to the management of these data sets has been ongoing for the past four to five years. The nature of the data to be managed has necessitated the use of a particular type of data management system, that is, a Geographic Information System (GIS). In this case, the Canada Land Data System, developed and maintained by Environment Canada, has been applied to the problem.

This paper deals with the ongoing work in the Atlantic Region, within the Department of Environment, to apply this GIS to the Resource Management Process in the National Parks. Information needs, decision nodal points, information flow, system capabilities, costs and benefits are dealt with. Actual uses and applications within the process are described and the basis for expanded application to this process is presented.

Location: 01.

83.180

Harmeson, Leigh; **Ontario Hydro's CARSS System, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983.

Abstract: Legislation and public outcry for thorough and comprehensive environmental assessments reinforced a need to record, store, manipulate and analyze large volumes of geographicaly referenced information. The computerization of this information was the only feasible method for handling large volumes of information. Ontario Hydro recognized this need in the field of transmission route selection and started developing a system, Computer Assistance in Route and Site Selection, in 1972. The system was originally to be used for projects covering large geographic areas (20,000,000 ha) using grid cells of 2 km x 2 km. Recently, two major projects, that used CARSS, were successfully defended at an Ontario Environmental Assessment Board hearing. One of the projects was 4,500,000 ha with 35 data maps recorded, another 50 data themes were derived from the original 35, and over 300 possible alternatives were identified and examined.

Location: 01.

83.181

MacDonald, K.B.; **Application of Computers to Cartographic Procedures in CanSIS, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983 pp.233-242.

Abstract: The Canada Soil Information System (CanSIS), developed by Agriculture Canada, consists of a cartographic and a data management subsystem. Maps are digitized manually as they are scribed for printing. Various types of computer generated cartographic output are produced; ranging from complete thematic maps to derivative, interpretive, and single factor maps. Over the past few years, the number of map retrievals has increased from a few demonstration plots to over 300 per year. A major area of activity is the development of file integration procedures. For cartographic data this entails the preparation of computer legends, illustrated here for three counties of Ontario. The output includes simple tabular reports of areas or map symbols prossessing specified attributes as well as interpretive maps showing basic computer-generated plots or plots enhanced by cartographic processes. Costs are presented for the example maps and reports. The challenges facing CanSIS include: developing the ability to communicate with other soil and geographic information systems,

meeting the demand for quantity and variety of output, minimizing the costs of data storage, and training the user to interact with the system.
Location: 01.

83.182
Somers, Rebecca M.; **Computer Mapping Development at the City of Calgary, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983 pp.243-251.

Abstract: The City of Calgary has implemented a computer mapping program in order to fulfill some of the City's major cartographic and geographic information needs. This program involves the cooperative efforts of several City Departments. Departmental data are mapped as overlays ona precise base map created directly from calculated survey coordinates. The ownership/tax parcel base map and data linkage capabilities are central to much of the program operation. Other applications include land use classification, utilities, addressing, assessment and transportation. In the future, other Departments will be adding their cartographic and geographic data to the mapping system. System development plans include increased data base capabilities, analytical functions and extended mapping functions. Expansion into other Departments will also necessitate distributed graphic input, display and output capabilities. This paper discusses the development and implementation of the mapping program, as well as the organizational aspects of the program operation. Present methodology, status and benefits are detailed, and future plans and challenges are discussed.
Location: 01.

83.183
Luscombe, B. Wayne; Poiker, T.K.; **STRABO - An Alternate GIS Approach to Decision-Making for Planning Applications in Data Scarce Environments, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983 pp.264-270.

Abstract: This paper discusses an alternate Geographic Information System approach to data-poor spatial analysis problems. The approach, which has been called the Strabo Technique, is based on a modified Delphi methodology and is well suited for those decision-making applications in which spatial data is unavailable and/or unattainable. Although the technique is a candidate for a wide range of uses, the paper concentrates on the potential impact that it has for resource development within the framework of lesser developed countries. Here one often finds decisions and plans being made in a vacuum of reliable spatial data to the detriment of the development objectives. The Strabo approach, alone or in association with other GIS functions, presents a relatively inexpensive and simply solution to a number of these problems. The emphasis is on the methodology and applications rather than physical systems since Strabo can be considered both machine and software "independent."
Location: 01.

83.184
Kevany, Michael J.; **Interactive Graphics Systems in Local Government Mapping: The Achievements and Challenges, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983 pp.283-290.

Abstract: The first system of the turnkey interactive graphics system genre was installed for mapping in a local government almost 10 years ago. Since that time, 100 or more others have been installed and more are being sold every day. The purpose of this paper is to explore the achievements and problems which have been experienced by those using this technology for mapping in local governments, and to pose certain challenges for the future based on those experiences. The paper will review the technology among mapping users, identify exemplary installations, identify the primary applications, discuss the common problems which have been encountered, and note trends which are emerging. Among these issues are the revolution which is occurring in local government mapping, the problems of existing source materials and the extent of user friendliness among systems. The issues will be discussed as they relate to practical applications in land information systems. Based on these experiences, the paper will present a series of challenges for improved utilization in the future. It will discuss the serious problem of initial data conversion, the potentials for attribute and graphic linkage, the future of direct user operation of the systems and the potential support for multipurpose cadastres.

Location: 01.

83.185

Chrisman, Nicholas R.; **The Role of Quality Information in the Long-Term Functioning of a Geographic Information System, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983 pp.303-312.

Abstract: A geographic information system requires a method to maintain its contents over the long-term. This process must handle quality components along with the data directly depicted on a map. Quality information includes lineage records, accuracies of position and classification, integrity of data structure and temporal reference, among other things. The quality component informs users of suitability for their applications, and it also offers distinct advantages to data producers with responsibility for long-term maintenance. Quality information is not currently maintained by most available software. New data structures and algorithms will be required to meet this need.

Location: 01.

83.186

Blakemore, Michael J.; **Generalization and Error in Spatial Data Bases, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983 pp.313-322.

Abstract: Many of the implications of generalization in computer cartography have been assessed in terms of computing efficiency and visual effectiveness. Minimized storage, display and plotting times are viewed positively. There are, however, important adverse effects in the use of geo-coded features and digital cartographic data; effects which relate to the nature of digital geo-coding, digitizing accuracies and other error sources. The resultant error has considerable impact on the validity of automated retrieval methods such as point-in-polygon. A set of simulations were carried out on a data base of 23 000 industrial establishments in N.W. England, using error-banded retrieval techniques. The effects of generalization highlight potentially serious geo-coding and retrieval errors.

Location: 01.

83.187

Buttenfield, Barbara Pfeil; **Topology and the Concept of the Statistical Solid, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983.

Abstract: A major disadvantage in automated construction of three-dimensional graphic displays lies in the facility with which such figures may be represented and re-represented. One can 'move around' in a virtual space, to view the object or surface from a variety of viewpoints and scales. Three-dimensional viewing techniques have been widely used for display of geographic terrain; they have also been applied to design and manufacture of solid objects. The statistical analogy to terrain representation is the smoothed, often fishnet surface by which single and multivariate relationships are commonly illustrated. Such surfaces have been applied to illustration in diverse sets of decision-making tasks, for example, in optimizing facility locations on a land-value surface.

The construction of a statistical solid is much less commonly used as a visual tool in spatial decision-making, but has been used to depict metric relations in cluster analysis and in multivariate regionalization techniques. Statistical solids may also be useful to illustrate topologic relationships. It is proposed that the visualization of such relations may facilitate their interpretation; and further, that computer generation of such display will provide a means to 'move around', to explore all facets of the multidimensional framework. Ronald Atkin's development of A-Analysis, or Polyhedral Dynamics, provides a guide for construction of the topologic relations. This paper will discuss techniques for illustrating these relations in a graphic framework, and suggest possible applications useful in decision-making tasks.

Location: 01.

83.188

Collins, Stanley H.; Moon, George C.; Lehan, Tim J.; **Advances in Geographic Information Systems, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the Sixth Int'l Symposium on Automated Cartography) 1983 pp.324-334.

Abstract: Research into spatial information systems has disclosed that geographic information systems (GIS have lagged behind important developments in computer science, information theory and interface design. Basic data structures such as vectors, strip trees and quad trees are discussed. Summaries of the properties of hierarchical, network and relational DMBS are given. Recent development of a relational spatial data base with variable-length and matrix records (RSDB) is described. RSDB has the capability to add the benefits of network and hierarchical DBMS to the relational system. The enhancement of information content is seen as a new function of the DBMS, making the topology and numerical attributes of features available with their coordinates. Improvements in data management and information content are seen as necessary for achieving the final goal, the improvement of the human interface. Any mode of interaction (keyboard, cursor movements, voice, etc.) should be available to the user for any application; and the choice should not be dictated by the particular query or data type.

Location: 01.

83.189

Cornwell, Bruce; Rohardt, Susanne; **An Extension of Map Overlay Concepts Using an Image Processing System, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.335-344.

Abstract: In the process of site and route selection, varying types of spatial data must be assembled, evaluated, and compiled. Traditionally done by hand, this task has been significantly expedited through the use of computers. Using a raster image processing system, Gibbs & Hill has developed a group of computer programs which search an array of maps for specific combinations of most suitable factors for potential site location. Suitability is commonly expressed according to an interval scale; that is, all ascending levels of suitability, from least to most suitable, increase by equal numerical intervals. Although the interval scale is prevalent in site selection studies, it is not the only numerical expression of variations in suitability, and perhaps not the best. Two alternatives are examined in particular: one determned by the ratio between consecutive values, and a second by the logarithm of numbers in the interval scale. In comparison to the interval scale, the alternatives offer probably a more realistic expression of variations in suitability, as well as greater resolution in the results.

Location: 01.

83.190

Taylor, D.M.; **Overlay: A Relational Data Base Management System for Spatial Analysis, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983.

Abstract: We present the background to the software product OVERLAY, a relational data base management system intended to support a class of applications requiring the ability to phrase and process complex queries against both spatial and attribute data. These applications include:

- resource management such as insect and pest control, forest harvest planning, and oil reservoir analysis.
- demographic studies and market research.
- digital image analysis
- biomedical research.

The capabilities of OVERLAY are for the most part complimentary to Computer Aided Draughting and Cartographic systems, and are distinguished as an analytical tool by the query facilities and the underlying mechanisms which provide for uniform treatment of spatial and attribute data. The development of OVERLAY has required investigation into a number of seemingly unrelated areas, most notably:

- the representation of spatial data.
- supporting logical operations against spatial data in a consistent manner.
- defining a complete data manipulation language consistent with both spatial and attribute data.

This paper will outline our work towards the implementation of a data manipulation language, the core of OVERLAY, in domain relational calculus.

Location: 01.

83.191

Comeau, M.A.; Holbaek-Hanssen, E.; **Compression and Compaction of Binary Raster Images, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.362-371.

Abstract: The raster scanning of large line-art images common in cartographic applications yields large binary images which must be stored and processed with the utmost efficiency. Although known data compression techniques have been effectively applied in this technology, the computational resources required to process these images are on an escalating trend as the processing logic becomes more sophisticated and the demands on raster scanning systems continue to grow. Recent developments at Canada Land Data Systems have shown that further reductions in both storage requirements and processing time can be achieved by utilizing more specialized image compression and compaction techniques. A new technique for reducing the resolution of binary images with no loss in topography and minimal loss in topology has been developed. This new technique is based on an existing line thinning algorithm and offers great savings in both the storage requirements and processing time required to process large binary line-art images.

Location: 01.

83.192

Aronson, Peter; Morehouse, Scott; **The ARC/INFO Map Library: A Design for a Digital Geographic Database, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.372-381.

Abstract: Geographic Information Systems are systems for the preparation, analysis, display and management of geographic data in electronic form. Even the most minimal of systems include processing and display functions, more capable systems include evaluation functions. To qualify as a full Geographic Information System, data management functions are also required. For these data management functions to operate efficiently, the managed geographic data should be organized into a database of some form.

MAP LIBRARY is the ARC/INFO Geographic Information System's geographic database. It is maintained and accessed by ARC/INFO's LIBRARIAN module. Browsing capability and additional access is provided by the QUERY program. These features, combined with ARC/INFO's processing, evaluation and display capabilities, comprise a full Geographic Information System.

This paper describes ARC/INFO's MAP LIBRARY database structure and QUERY browsing program. The design process for MAP LIBRARY and QUERY is described along with discussions of some of the rejected alternative designs and features.

Location: 01.

83.193

Sugarbaker, Larry J.; **Development of Geographic Information Handling Capabilities: Washington State Department of Natural Resources, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983.

Abstract: The Department of Natural Resources in Washington State is responsible for the management of 3,000,000 acres of uplands and 2,000,000 acres of marinelands. The uplands are largely forested and there are, in addition, areas of grazing and agriculture. The collection and analysis of data for the management of these resources has been an ongoing process for more than twenty years. The department is currently acquiring a new system (third generation to the department) to meet these requirements. The purpose of this paper is to describe the process of identifying information needs and the functional requirements for this geographic information system.

The first inventory system developed by the department utilized hand drafted forest type maps and computer punch card encoding of the timber inventory data. Upon recognition that higher level planning information was required, the department developed its own second generation Gridded Resources Inventory Data System (GRIDS). Resource data were collected for sample locations on a regular grid on a state plane coordinate base. The system provided site specific information for these sample cells and was able to summarize data for statewide planning purposes.

The department began to assess its need to further enhance its geographic information handling capabilities in 1979. A growing list of planning requirements associated with land management activities prompted a study of the need for GEOgraphic Multiple use, Analysis and Planning System (GEOMAPS). This study has resulted in a statement of information needs, data requirements and system functional requirements specific to the needs of Washington State. Proposals were received from vendors. System selection was based on the results of a benchmark test administered to three potential vendors.

Location: 01.

83.194

Coker, Charlotte F.; Von Gruenigen, Susan; **An Integrated Mapping System for Today and Tomorrow, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.384-391.

Abstract: Interactive graphics technology can dramatically enhance the productivity of the cartographer and earth scientist. The high degree of responsiveness and ease of interaction, coupled with a dynamic visual presentation, allow the extensive amount of technical data inherent in the mapping process to be reduced to manageable quantities in forms familiar to the skilled professional. Current technology supports systems which have the flexibility to accept data from a variety of sources, including existing maps, stereo compilers, electronic theodolite instruments, field notes, and remotely sensed data, as well as data in other digital formats. These systems provide the capability to add intelligence to the graphic data and to merge captured information to form a continuous map. Interactive tools are available as a part of these systems, through which data can be analyzed, revised, used for map design and/or generalized and symbolized to produce a wide range of map products. One system which has these capabilities is comprised of hardware and software developed and refined by Intergraph Corporation.

Location: 01.

83.195

Callahan, George M.; **Digital Cartographic Data Production Using Raster Scanning Techniques, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.392-399.

Abstract: The National Mapping Division (NMD) of the U.S. Geological Survey has the responsibility for building and maintaining a Digital Cartographic Data Base to support the National Mapping Program. A major task that must be accomplished to fulfill this responsibility is the efficient collection and processing of the information contained in the large inventory of published maps maintained by the Division. Production procedures and software are being developed which will enable the NMD to digitize, encode, and structure digital cartographic data collected on the Scitex Response 250 raster scanning system. The production procedures being developed comprise: (1) pre-digital preparation of materials to utilize the color recognition capabilities of the system, (2) improved raster editing; (3) automatic node generation/structuring software; and (4) improved vector tagging/editing procedures.

Location: 01.

83.196

Goodchild, M.F.; Grandfield, Andrew W.; **Optimizing Raster Storage: An Examination of Four Alternatives, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.400-407.

Abstract: The performance of many algorithms in spatial data processing depends on the way in which spatial entities are ordered. The paper defines a general class of problems in which the objective is to preserve as far as possible the spatial relationships present in two dimensions. Applied to a raster, the problem leads to the N or Morton ordering and a new Pi-order is proposed based on a familiar Peano curve. An algorithm is given for defining Pi-order. These are compared empirically and analytically to the conventional row ordering, and a simple variant, using a number of standard images and using a class of indices which includes the spatial autocorrelation measures. The empirical results support Pi-order but the analytic results are mixed.

Location: 01.

83.197

Schmidt, Warren E.; **The Study of Digital Cartographic Data Features in preparation for a National Standard, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983.

Abstract: The Features Working Group of the U.S. National Committee for Digital Cartographic Data Standards has the tasks of studying cartographic feature classification systems and specifying a model that is consistent and comprehensive. Since its inception in August 1982, it has addressed the issues of scale independence, data organization, form of feature definition and basic cartographic data. Six goals for features in a national standard were recommended: independence from symbolization or scale; universality; logical structure; single classes with multiple attributes; explicit definition; and derivation from basic feature sets. A prototype classification system based on five levels is being tested. Future work calls for assembly of feature sets and glossaries, and cost estimates for future standards.

Location: 01.

83.198

Rhind, David W.; Adams, Timothy A.; Fraser, Simon E.G.; Elston, M.; **Towards a National Digital Topographic Data Base: Experiments in Mass Digitising, Parallel Processing and the Detection of Change, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.428-437.

Abstract: A recently completed topographic data base exists in paper map form for Britain: consisting of 220,000 maps, this set of maps will form the basis of a digital data base. This paper describes recent experiments in three areas which underpin the creation and maintenance of the digital data base. An automated digitising test, carried out by six contractors, is described and the results assessed. Experiments have been made with raster - format data using a 64 x 64 parallel processor to handle OS map data and these are outlined. Finally, research into the determinants of topographic change and its location is described.

Location: 01.

83.199

Wood, Alex J.; **Automated Cartography System Research and Development, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.448-449.

Abstract: The technological marriage between photogrammetric processing and interactive graphic systems has produced many benefits, particularly digital mapping. With data now readily accessible by computer, the application of digital technology has produced significant cost savings over traditional methodologies. For example, a simple engineering application of using automated profile and cross-section routines on an interactive graphics terminal enables the design engineer to select an optimum pipeline alignment for the parkland regional sewer trunk. The production of digital maps is a relatively straightforward process. The utilization of this data in practical applications lends itself to a certain amount of ingenuity. Whilst both these production tasks are valid in themselves, the most important component of any map is the underlying information, for example - soil type, vegetation, owner's name, depth of mineral deposit, diameter of pipe, etc. Geographic information systems are data management tools that efficiently process the immense reservoir of data attached to a map image. The decision maker must be able to interpret and evaluate this attribute information in a cost effective manner before reaching a final decision. A software package has been developed which has the characteristics of allowing the user to interrogate any existing data bases. It is totally device independent for report generation and graphics output, functional model architecture, menu driven, operating on virtual system architecture. A typical land use application is outlined comparing traditional information retrieval times with the developed software application module. Future development work includes microcomputer intelligence, fast graphic processing capabilities and Landsat image processing. Conclusions are drawn between computer-aided mapping systems and geographic information systems.

Location: 01.

83.200

Rodrigues, Marcos; Camargo, Ingrid G.G.R.; Bruha, George; Silva, Raquel S.; Mello, Luiz S.H.; **An Experience With the Absorption, Development & Dissemination of Spatial Information Handling & Mapping Systems, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.471-479.

Abstract: The paper describes the experience of the Urban and Regional Systems Group - ASUR of the Sao Paulo Technological Research Institute, in the area of spatial information handling and mapping. The group's role is to study, absorb, develop and disseminate these technologies to governmental and private agencies involved in urban and regional planning. Starting with software developed elsewhere, the group initially sought the development of a comprehensive system. The variety of applications faced has induced the pursuing of a different strategy that was defined vis-a-vis the stability of the application's nature, purpose, urgency resource availability, continuity, user maturity, spatial units, etc. The new strategy presupposes that technology transference can occur at various levels: conceptual, methodological, basic programs, systems and services. This meant, to start with, the establishment of a set of 230 compatible standard FORTRAN subroutines. The specificity of applications and the scarcity, and variety, of graphic hardware suggest that high modularity and thorough method and program documentation may be the key determinants of the strategy success away from comprehensive and expensive turn-key systems.

Location: 01.

83.201

Prashker, Steven; Taylor, D.R.F.; **MIGS: A Microcomputer Mapping System for Cartography in Developing Nations, Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983 pp.480-487.

Abstract: The use of computers in Third World countries can be difficult and expensive and problems exist of a technical, political and socio-economic nature which are different from those found in the North American context (Taylor & Obudho, 1979). These general problems have hindered the effective introduction of computer-assisted cartography in developing nations. The advent of the microcomputer is radically altering this situation and as a result new opportunities exist. This paper will describe the MIGS system and consider its utility in a Third World context.

Location: 01.

83.202

Glick, Barry; Hirsch, Stephen; **Knowledge Engineering for Spatial Data Systems (KESDS), Volume I - Automated Cartography: International Perspectives on Achievements and Challenges,** (at: Auto-Carto Six - Sixth Int'l Symposium on Automated Cartography) (The Steering Committee for the 6th Int'l Symposium on Automated Cartography) 1983.

Abstract: PAR Technology has developed a rule-based system that allows the use of probabilistic inferential reasoning in a geographic information systems environment. Like most expert system frameworks, KESDS consists of two main components: an inference engine and a rule base. The inference engine consists of the software for a general mechanism to draw and explain inferences. The rule base is a text file consisting of a set of conditions and actions which provide the knowledge for particular inferences to be made to solve a problem. The task of building a rule base, in the field of Artificial Intelligence, is known as knowledge engineering.

In this paper, we provide an introduction to rule-base building using KESDS. We also discuss the essential components of an inference engine and approaches to building a rule base for specific GIS applications, such as imagery (remote sensing) data interpretation, geographic analysis, and cartographic text placement.

Through these application examples, we illustrate the benefits to be gained from using expert systems in a GIS context.

Location: 01.

83.203

Nelson, B.; McGregor, B.; **A Modification of the Non-Contiguous Cartogram,** (in: New Zealand Cartographic Journal, Vol.12, no.2) 1983, February pp.21-29.

Abstract: A study was carried out which examined the communicative effectiveness of three types of area cartograms and two standard mapping techniques. The maps used in the testing portrayed population, while a series of test questions attempted to focus on the map reader's ability to extract various types of information from the maps, for example, absolute quantities, density and "distribution" of population. A modified version of the non-contiguous cartogram scored surprisingly well in the testing, particularly with respect to density. The results suggest that the modified non-contiguous cartogram may be a very useful method for portraying densities.

Location: 01.

83.204

Price, William; **The Global Positioning System,** (in: Chartered Land Surveyor/Chartered Minerals Surveyor, Vol.4, no.3) 1983 pp.42-58.

Abstract: The US Government has been developing a surveying and navigation facility called the Global Positioning System. When fully operational it will provide worldwide coverage on a continuous and all-weather basis for users on or above the surface of the earth. For single fixes the precision expected is 10 m for sophisticated equipment and 200 m in the worst case. The main features are described in a simplified form including the operating principles involved and equipment characteristics. Error sources and accuracy limitations are outlined and future civilian involvement in the system is discussed.

Location: 01.

83.205

Therrien, Charles W.; **An Estimation - Theoretic Approach to Terrain Image Segmentation, Computer Vision, Graphics and Image Processing 22,** 1983 pp.313-326.

Abstract: A method for modeling images of natural terrain is developed and applied to the segmentation of aerial photographic data. An underlying stochastic structure based on linear filtering concepts provides a means of modeling the terrain in local areas of the image. Superimposed on this is a Markov random field that describes transitions from regions of one terrain type to another. Maximum likelihood and maximum a posteriori estimation are applied to estimate regions of similar terrain. Results of application to digitized aerial photographs are presented and discussed.

Location: 01.

83.206

Li, F.K.; Bryan, M. Leonard; **Tradeoffs Among Several Synthetic Aperture Radar Image Quality Parameters: Results of a User Survey Study,** (in: Photogrammetric Engineering and Remote Sensing, Vol.49, no.6) 1983, June pp.791-803.

Abstract: A synthetic aperture radar (SAR) is a complex remote sensor. In such remote sensing systems there are a number of options available for tradeoffs by the system designer. In this study we analyze the effects of adjusting the "number of multiple looks" (i.e., the amount of incoherent averaging used in producing the imagery), the "resolution" (i.e., the spatial distance separating identifiable targets), and the "number of bits" (i.e., the number of quantization levels per sample of the raw SAR signal). Several scenes obtained by the Seasat SAR were processed in a variety of ways and studied by a group of interpreters. Their responses were tabulated with respect to the particular scene and the different processing parameters which were used to produce the images. It is concluded that the relative importance for image interpretation is, in decreasing order, resolution number of multiple looks and number of bits. However, these results should not be considered as applicable for all cases, because some observed trends are sharply countered with the nature of the

targets imaged.
Location: 01.

83.207
Schneider, J.B.; **Applications of Computer Graphics in the Transportation - Land Use Field: A Review and Forecast for the Eighties,** (Roads and Transportation Association of Canada) 1983.

83.208
Perucchio, Renato; Ingraffea, Anthony R.; **Interactive Computer Graphic Preprocessing for Three-Dimensional Boundary-Integral Element Analysis,** (in: Comput. Struct., Vol.16, no.1 4) (Cornell Univ.) 1983 pp.153-166.

Abstract: An interactive computer graphic system has been develped for generating and editing three-dimensional meshes for boundary-integral element analysis. The various difficulties inherent in the generation of solid three-dimensional geometries for both finite and boundary-integral element analysis are examined to explain the advantages of the present approach. The surface generation algorithm used for geometric modelling is based on the assumption that the three-dimensional region can be subdivided in series of contiguous subdomains, which in turn can be separately described by a set of planar cross sections. Discrete transfinite mapping and cubic spline bending algorithms are used, respectively, to create plane cross-sectional meshes, and to generate the three-dimensional geometry by interpolating between the cross sections. The preprocessor has been developed as part of an integrated structural analysis system and is linked to an analysis code specifically designed for virtual memory, minicomputer operations. 22 refs.

83.209
Peuquet, Donna J.; **A Hybrid Data Structure for the Storage and Manipulation of Large Spatial Data Sets,** (in: Computer Graphics and Image Processing, Vol.24, no.1) 1983, October pp.14-27.

83.210
Samet, Hanan; **Using Quadtrees to Represent Spatial Data,** (University of Maryland) 1983.

83.211
McEwen, Robert B.; **Observations and trends in digital cartography 1982,** (at: Int. Society for Photogrammetry and Remote Sensing Commission IV: Cartographic and Data Base Applications of Photogrammetry and Remote Sensing at Crystal City, VA.) 1983 pp.419-431.

83.212
Moore, W.C.; **Operational Mapping of All Burned Forest Land in the Northwest Territories With Satellite Imagery,** (Forestry Statistics & Systems Branch, Can. Forestry) 1983.

83.213
Narsingh, Pear; **System Simulation with Digital Computer,** (Prentice Hall) 1983.

83.214

Beard, Stuart W., (ed.); **CONRIM Newsletter (Committee on Natural Resource Information Management)**, (Arctic Environment Information and Data Centre) 1983.

83.215

Merry, C.J., et al; **Land Treatment Processes Within CAPDET (Computer Assisted Procedure for the Design and Evaluation of Waste Water Treatment Systems)**, (U.S. Army Cold Regions Research and Engineering Laboratory) 1983.

83.216

Lane, Jeffrey M.; Magedson, Robert; Parick, Micheal; **Note: An Algorithm for Filling Regions on Graphics Display Devices**, (in: ACM Transactions on Graphics, Vol.2, no.3) 1983, July pp.192-196.

> **Abstract:** The display of shaded polygons, is a task frequently used in many application areas of computer graphics. In applications such as the production of hidden surface images, cartography and animation, algorithm efficiency is important.

83.217

Alberta Bureau of Surveying & Mapping. **System Requirements Definition for the Development and Implementation of the Alberta Photogrammetric Control System**, (Survey Control Branch) 1983.

83.218

Canada. National Research Council. **Procedures and Standards for a Multipurpose Cadastre**, (National Academy Press) 1983.

83.219

Fessenden, R.J.; McGill, W.B.; Pettapiece, W.W.; **Soil/Land Inventory in Alberta**, (Alberta Institute of Pedology) 1983.

83.220

McKay, L.; **Environmental Information Management in the Energy Resource Industry**, (University of Calgary, Faculty of Environmental Design) 1983.

83.221

Brassel, Kurt E.; Kiriakakis, Zissis; **Orthogonal Three-Dimensional Views for Thematic Mapping**, (at: SORSA Forum '83 at Maryland USA) 1983.

> **Abstract:** A new mapping method for statistical surfaces is proposed. It combines some properties of three-dimensional diagrams, oblique hill-shading and choropleth mapping. The model modifies the geometry of a discrete statistical surface consisting of a set of prisms. The slopes of the prisms are modestly tilted, and the new surface is viewed from a vertical viewpoint. Visual effectiveness is improved by using oblique hill-shading. The geometry and construction algorithms are explained, in addition some application problems are discussed.

83.222

Yan, Joel; Bradley, D. Ross; **Computer-Assisted Mapping for Census Collection - Progress and Prognosis**, (at: Canadian Cartographic Association Conference at Calgary, AB) 1983.

> **Abstract:** The Census of Canada, often referred to as the largest peacetime operation carried out by the Government of Canada, takes place once every five years. Its objective is to count all persons living in Canada at their usual place

of residence on Census Day. To carry out a task like this requires some 35 to 40,000 census representatives (enumerators) to drop off questionnaires to about 9,300,000 households during a very short but specific time period. To ensure an orderly coverage, maps must be provided to census representatives so that precise geographic areas are covered once and only once trhoughout the entire land mass of Canada. For the 1981 Census, some 300 collection maps were successfully produced using a prototype computer mapping system. Given promising results, census management approved the development of a production system for computer-assisted mapping, with the intention of producing about 8000 enumeration area maps for the 1986 Census.

This paper describes the computer-assisted mapping system being developed, and application experiences from 1981 census and a volume pilot study conducted in January 1983.

83.223

Brassel, Kurt E.; Herzog, Adrian; Bopp, Matthias; Dorigo, Guido; **A System to Generate Vector Data Bases from a Grid Information System**, (at: SORSA Forum '83 at Maryland USA) 1983.

Abstract: The Department of Geography, University of Zurich, has developed a system to generate vector type outline data bases from a raster information system. The conversion procedure includes algorithms to overlay the various grid planes, to interactively correct the grid data base, to retrieve an arc file of arbitrary areal units, to generalize and concatenate the arcs, and output them in various formats. The paper presents the basic system components and some application examples.

83.224

Edwards, Robert; **An Algorithm to Calculate Proportional Area Transformation Factors for Digital Geographic Databases,** (at: Spatially-Oriented Referencing Systems Association SORSA '83 General Meeting and Symposium at Maryland USA) 1983.

83.225

Van Est, Jan; Scheurwater, Jan; **The Geographic Base Register and a Geographic Base File: the Use of Postcodes as Segmentidentification**, (at: SORSA Forum '83 at Maryland USA) 1983.

83.226

Neraasen, Terrance G.; **Landsat: Computer Assisted Inventory & Mapping of Wetlands in Western Canada**, 1983.

Abstract: Wetland Mapping is done with the laboratory for the application of remote sensing at Purdue University, Interdisciplinary Systems (Canada) Ltd., and the Canada Centre for Remote Sensing.

83.227

Peuquet, Donna J.; **High Hibrid Structures for the Storage and Manipulation of Very Large Spatial Data Sets**, (in: Computer Graphics & Data Processing,) 1983, Oct.. **Location:** 47.

83.228

McLaughlin, John; **Land Information Management: A North American Perspective**, (at: Urban and Regional Information Systems Association at Sydney, Australia) 1983. **Location:** 45.

83.229
McLaughlin, John; Wunderlich, C.; **Concepts and Approaches to Land Information Management**, (at: Federation Internationale des Geometres Congress XVII at Sofia, Bulgaria) 1983.
Location: 45.

83.230
McLaughlin, John; **The Land Information Management Concept**, (at: United Nations Seminar on Topographic and Hydrographic Surveying at Dubai, U.A.E.) 1983 pp.6-8.
Location: 45.

83.231
Brown, R.J.; **Alberta Range Land Assessment Using Remotely Sensed Data**, (Canada Centre for Remote Sensing Research) 1983.
Location: 27.

1984
CITATIONS

CITATIONS

84.001

Holmes, R.F.; Wolle, F.R.; **Contingency Planning with Aerial Photography and Geographic Information Systems,** (Environmental Protection Agency) 1984.

Abstract: The incident at the 3 Mile Island Nuclear Plant has led to many changes in the operation and employee training in U.S. Nuclear Power Industry. This paper presents an approach to the preparation of a comprehensive geographic information system that would meet the needs for monitoring, movement of population away from a site and general information for decision making. The geographic system would cover each of the 72 plants now in operation and the approximately 94 sites under construction. Each site would have a portfolio prepared to show: a high altitude aerial photo and selected low level photos, inventory of drinking water locations, an inventory of dairy farms, a population distribution plot, an inventory of food crop-producing farms, general land-use to a USGS level III/IV, meteorological data, routes of egress and access, and a topographic map with potential monitoring sites. The paper proposes how to use aerial photography, topographic maps and meterological data to prepare the emergency documents. Cost of acquisition, analysis and documentation are presented.

AUTHOR INDEX

AUTHOR INDEX

AALTONEN, R.A.
74.116

AANGEENBRUG, ROBERT T.
83.163 80.001 79.001 76.001 75.002 75.001
73.001 72.001 71.001

AARHUS UNIVERSITET, LABORATORIET FOR GEOFYSIK
75.190

ABDOSHAH, K.
79.002

ABEL, JOHN F.
82.085

ACM
78.176

ACQUAH, J.
82.283

ACSM. REGIONAL SURVEYING EDUCATIONAL DIRECTORATE. NEW ENGLAND SECTION
76.115

AD HOC COMMITTEE FOR THE DEMONSTRATION OF AN ALBERTA LAND-RELATED INFORMATION SYSTEM
76.108 76.003

ADAMS, FRED
76.002

ADAMS, MARILYN JAGER
76.048

ADAMS, N.J.
77.001

ADAMS, NORMAN S.
75.140

ADAMS, TIMOTHY A.
83.198 82.272 82.271 82.268 81.180

ADDISON, L.E.
77.075

ADDOR, EUGENE E.
74.009

ADER, ROBERT R.
81.154

AERIAL DATA REDUCTION ASSOCIATES, INC., PENNSAUKEN N.J.
77.021 76.017

AFFLECK, SHELDON
77.002

AGATSTON, R.S.
76.122

AGIN, G.J.
78.061

AHLGREN, R.C.
74.113

AHNER, RAYMOND P.
73.002

AIKEN, G.S.
71.002

AIR FORCE ENVIRONMENTAL TECHNICAL APPLICATIONS CENTER, SCOTT AFB, IL.
74.055

AIRD, PAUL L., ED
75.122

AKL, S.G.
81.058

ALAN M. VOOHEES & ASSOCIATES, INC., MCLEAN, VA.
79.123

ALBEE, W.
77.003

ALBERTA BUREAU OF SURVEYING & MAPPING
83.217

ALBERTA DEPARTMENT OF THE ATTORNEY GENERAL
78.153

ALBERTA LAND SURVEYORS' ASSOCIATION
80.002 79.204 75.271 75.270 75.237 75.229
75.217 75.201 75.162 75.146 75.113 75.041

ALBERTA POWER LIMITED. SURVEY DIVISION
75.146

ALBERTA REMOTE SENSING CENTER
80.011

ALBERTA. DEPARTMENT OF ENVIRONMENT
82.305

ALBERTA. DEPARTMENT OF ENVIRONMENT. CONSERVATION AND UTILIZATION COMMITTEE
74.034 74.001

ALBERTA. DEPARTMENT OF ENVIRONMENT. INTERDEPARTMENTAL RELATIONS DIVISION
76.108

ALBERTA. DEPARTMENT OF ENVIRONMENT. RESOURCE COORDINATION BRANCH
76.004

AUTHOR INDEX

ALBERTA. DEPARTMENT OF MUNICIPAL AFFAIRS. RESEARCH PLANNING SECTION
72.002

ALBERTA. DEPARTMENT OF RECREATION & PARKS
82.313 80.072

ALBERTA. ENERGY RESOURCES DATA SYSTEM
80.040

ALBERTA. LANDS AND FORESTS
73.029

ALBERTA. MINISTRY OF INDUSTRY AND COMMERCE
72.003

ALBERTA. OFFICE OF PROGRAM CO-ORDINATION
74.002

ALBERTA. OFFICE OF THE PROVINCIAL AUDITOR. DATA PROCESSING CENTRE
72.004

ALBERTA. PROVINCIAL ASSESSOR'S OFFICE
73.003

ALBERTA. SURVEY CONTROL
75.238

ALBERTA. TREASURY
81.175

ALBERTA. TREASURY. BUREAU OF STATISTICS
77.004

ALBOND, HARVEY N.
74.003

ALBURQUERQUE, P.C.G.
81.032

ALDERMAN, PHILIP K.
82.045

ALDERMAN, WILLIS H.
75.003

ALDRED, P.J.
78.001 77.005

ALEXANDER, ROBERT H.
76.008 76.007 76.006 76.005 75.005 75.004
73.004

ALFORD, M.
74.004

ALFREDSSON, BJORN
70.001

ALLAM, M.M.
78.003 78.002

ALLAM, MOSAAD
80.003

ALLDRIDGE, EVERETT O.
73.005

ALLEN, BRENT
82.293

ALLEN, M.M.
76.009

ALLEN, NEIL, ET AL.
73.006

ALLEN, RICHARD K.
82.301

ALLEN, WALTER
74.005

ALLESANDRI, JOSEPH B.
76.037

ALLMAN, J.S.
81.068

ALMY, RICHARD R.
77.006 75.006 73.007

ALSBERG, PETER A.
73.008 72.035

ALSPAUGH, DALE W.
81.013

ALSTON, FARNUM
72.084

ALVAREZ, DONALD T.
74.006

ALVAREZ, R. C.
82.310

ALVO, M.
83.120

AMANULLAH, SYED
79.183

AMERICAN APPRAISAL ASSOCIATES
75.007

AMERICAN BAR ASSOCIATION
76.040

AMERICAN CONGRESS ON SURVEYING AND MAPPING
81.056 75.174

AUTHOR INDEX

AMERICAN PUBLIC WORKS ASSOCIATION. CAMRAS PROGRAM
79.008

AMERICAN SOCIETY OF PHOTOGRAMMETRY
83.098

AMERICAN SOCIETY OF PLANNING OFFICIALS. CHICAGO, IL.
75.008

AMIDON, E.L.
81.037 75.207 75.009 74.007 71.003 71.002

AMOCO CAN. PET.CO.. CALGARY, ALTA.
75.274

AMOCO PROD. CO., DENVER, CO.
75.003

AMSTERDAM, ROBERT
71.004

ANACAPA SCIENCES, INC.
82.107

ANALYTIC SCIENCES CORPORATION, READING MA
78.066

ANDA, B.
75.010

ANDERSON, DELMAR E.
75.011

ANDERSON, K. ERIC
77.169 77.007

ANDERSON, ROBERT H.
79.003

ANDERSON, WALTER M.
76.119

ANDERSSON, JUNE
80.004 75.012

ANDREWS, HARRY
79.199

ANDRIS, H.R.
80.063

ANDRULIS RESEARCH CORP.
81.024

ANGELICI, G.L.
77.008

ANN ARBOR CITY PLANNING DEPARTMENT
78.015

ANN ARBOR COMMUNITY PLANNING AND MANAGEMENT, MI.
74.104

ANOCHIE, ONONEZE M., ED.
77.245 77.244 77.235 77.201 77.183 77.180
77.161 77.143 77.123 77.118 77.103 77.079
77.078 77.067 77.056 77.013

ANON
81.056

ANTENUCCI, JOHN
79.005 79.004 74.118 74.041

ANTILL, PAUL
77.009

ANUTA, P.E.
79.039 72.094

APPLEGATE, D.N.
73.092

APPLIED URBANETICS, INCORPORATED, WASHINGTON, D.C.
75.158

APSAMP PROGRAMME. MANAGEMENT COMMITTEE
71.046

ARAZI, EFRAIM
79.024 79.020

ARBOUR, JOSEPH H.
83.179

ARCO EXPLORATION CO.
81.065

ARGONNE NATIONAL LABORATORY. DIVISION OF BIOLOGICAL AND MEDICAL RESEARCH
80.032

ARGONNE NATIONAL LABORATORY, ARGONNE IL.
83.070 83.014 78.103

ARIZONA UNIV.
83.005

ARIZONA UNIV., DIGITAL IMAGE ANALYSIS LAB.
81.043

ARIZONA. DEPARTMENT OF REVENUE
79.202

ARMSTRONG, D.W.
77.010

AUTHOR INDEX

ARMY ENGINEER TOPOGRAPHIC LABORATORIES, FORT BELVOIR, VA.
79.002 78.126 75.168 75.106 75.105 74.060

ARMY ENGINEER WATERWAYS EXPERIMENT STATION, VICKSBURG, MS.
77.212 74.009

ARNOLD, GERRY
80.005

ARNOLD, J.G.
77.011

ARNOLD, K.C.
77.253

ARNOLD, S.G.
77.012

ARONSON, PETER
83.192

ASSOCIATED ENGINEERING SERVICES LTD.
81.176

ASSOCIATION OF BAY AREA GOVERNMENTS, BERKELEY, CA.
80.113 79.220

ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF ALBERTA
75.271 75.270 75.237 75.229 75.217 75.201
75.162 75.146 75.113 75.041

ATHANASSOULIS, G.
78.028

ATKEY, COL. R.G.
76.010 75.013

ATTORNEY'S TITLE GUARANTY FUND INC., DENVER, CO.
75.129

AUBURN UNIVERSITY. ENGINEERING EXPERIMENT STATION
74.045

AUGUSTIN, PAUL
72.005

AUGUSTINE, ROBERT F.
82.128

AUSTIN STATE UNIVERSITY, NACOGDOCHES, TX.
74.112

AUSTIN, D.M.
75.273 75.116 75.014 74.139 74.068

AUSTRALIA, DEPARTMENT OF AGRICULTURE
77.010

AUTIO, H.
77.101

AUTOMETRIC INC., ARLINGTON, VA.
78.125 78.021

AYERS, EUNICE
79.006 75.015 74.010 74.008 73.009 71.005

B.C. MINISTRY OF FORESTS
83.031

BABBY, P.
82.013

BAER, JOHN
77.013

BAHM, ELDEAN
73.133

BAILEY, C.
83.069

BAIN, JOHN
75.016

BAKER, H. HARLYN
82.121

BAKER, LEONARD S.
73.010

BALAZS, EMERY I.
82.032

BALBACH, HAROLD
83.091

BALESHTA, T.
83.134

BALTIMORE CITY. DEPARTMENT OF PLANNING
78.128

BALTZ, DAVID K.
81.146

BANZ, GEORGE
79.007

BARABBA, VINCENT P.
76.011 75.017

BARACAT, WILLIAM A.
81.033

BARB, CHARLES E., JR.
82.196 75.019 75.018 74.012 74.011 72.006
71.006 70.023

AUTHOR INDEX

BARE, BRUCE, ED.
75.255 75.212 75.171 75.154 75.140 75.072

BARNARD, JOSEPH E.
78.004

BARNARD, STEPHEN T.
82.116

BARNES, ALLEN E.
83.032

BARR, JOEL
76.012

BARR, MACDONALD
83.141 75.021 75.020

BARRACLOUGH, ROBERT E.
73.011 71.007

BARRETT, E. C.
82.296

BARRETT, SUSAN M.
70.002

BARROS, O.
82.097

BARROW, HARRY G.
78.061 77.014 76.013

BARTEE, THOMAS C.
82.133

BARTH, K.
78.028

BARTON, SAMUEL G. III
80.006

BARWINSKI, KLAUS
75.022

BASOGLU, UMIT
77.015

BASYE, PAUL E.
73.013 73.012

BATES, R.
82.284

BATHKE, WILLIAM L.
80.007 79.010 79.009 79.008 77.016 75.023
73.015 73.014 72.007

BATKINS, DONALD L.
82.166

BATSON, R.M.
75.025 75.024

BATTELLE MEMORIAL INSTITUTE
72.007

BATTELLE PACIFIC NORTHWEST LABORATORIES. RICHLAND, WA.
83.073 83.067 77.075 73.070

BATTELLE-COLUMBUS LABORATIES, COLUMBUS, OH.
77.245

BATTLE, JOYCE E.
77.017

BATTY, MICHAEL
70.003

BAUER, DAVID H.
82.167

BAUER, KURT W.
80.008

BAUMANN, JOHN
79.020

BAUMANN, P.R.
79.011 78.005

BAUMER, GEORGE M.
82.220

BAVINGER, WILLIAM A.
79.012 74.102

BAXTER, R.A.
77.018 76.014

BAYER, F.
82.101

BEANLANDS, GORDON E.
82.243

BEARD, STUART W., (ED.)
83.214

BEATTY, J.
82.284

BEAUDET, PAUL R.
73.016

BECHTHOLD, GRANT
83.135

BECK, BRUNO
77.019

BECK, FRANICS J.
79.013

AUTHOR INDEX

BECK, J.
82.284

BECKER, PATRICIA COUSENS
72.008

BEHRENS, JOHN O.
76.015 75.026 73.018 73.017 70.004

BEINGESSNER, KEVIN L.
81.163

BELL LABORATORIES
82.091 79.141

BELL TELEPHONE LAB., MURRAY HILL, NJ.
78.073

BELL, CHARLES E.
83.146

BELL, PAUL D.
82.038 76.016

BELL, S.B.M.
75.027

BELLING, GEORGE E.
78.006

BELLNAP, N.J.
76.118

BEN-MOSHE, RAM
75.028

BENDER, LEE UHRIG
77.020

BENDIX AEROSPACE SYSTEMS DIVISION. ANN ARBOR, MI.
74.100

BENDIX CORP.
82.024

BENDIX FIELD ENGINEERING CORP., GRAND JUNCTION OPERATIONS
82.055

BENNETT, HOWARD C.
77.021 76.017 73.019

BENNETTSON, A.V.
78.007

BENNY, A.H.
81.036

BENSON, WILLIAM H.
81.087 79.221 78.177 74.068

BENTON CITY PUBLIC WORKS OFFICE. CORVALLIS OR.
79.165

BERGER, A.W.
80.009

BERGIS, V.
82.053

BERKELEY-CHARLESTON-DORCHESTER COUNC. OF GOV., CHARLESTON, SC.
77.115

BERKUN, KENNETH
81.155

BERLINGUETTE, G.E.
78.008

BERNARD, RENE, ED.
75.200 75.187 75.100 75.052 75.010

BERNER, H.
75.029

BERNHOLTZ, ALLEN
72.009

BERRY, CAROL J.
78.159

BERRY, JOSEPH K.
81.066 80.092 80.010 79.201

BERTRAND, RENE, ED.
75.267 75.232 75.230 75.147 75.138 75.133 75.038 75.001

BESENICAR, JURE
78.009

BEST, D.L.
78.010

BEST, WILLIAM G. (ED.)
81.127

BETLER, JOHN R.
77.023

BEYER, ARNO
76.018

BEYER, E.P.
83.028

BEYLIN, J.
77.104

BHAGWAT, ARUN P.
72.010

AUTHOR INDEX

BICKMORE, D.P.
82.233 75.027 70.005

BIE, STEIN W., ED.
78.011 77.152 77.150 77.074 77.061 77.057
77.022 77.010 74.013

BIER, R.A. JR.
78.012

BIGGIN, MERLE J.
76.019

BIGLER, CRAIG
71.035

BILANOW, S.
82.120

BILLINGSLEY, F.C.
82.005

BILLINGSLEY, J.
79.053

BINFORD, THOMAS O.
82.121

BIRKNER, PAUL A.
76.020

BISHOP, I
81.164

BLACHUT, T.J., ED.
79.191 79.014 74.063 74.058 74.016 74.015
74.014 73.020

BLACK, STEPHEN
72.011

BLACKIE, W.V. ED.
75.030

BLACKWELL, RICHARD J.
80.096

BLADH, KENT
79.015

BLAIR, G.
82.290

BLAIR, S.C.
83.067 82.258 82.257 82.221 81.172

BLAKE, DAVID G.
73.086

BLAKEMORE, MICHAEL J.
83.186 79.016 77.025 77.024

BLANCHET, P.H.
78.013 72.012

BLEANEY, J.H.
75.031

BLUMBERG, MAURICE H.
78.014 76.021

BLY, BELDEN G.
82.222

BLY, S.
82.123

BOASE, P.J.
83.171

BOCKES, OLIN
76.026 76.022

BOEHM, S.
77.104

BOEING COMPUTER SERVICES, INCORPORATED. SEATTLE, WA.
75.048 72.062 72.014 72.013

BOETJE, GERALD
74.042

BOHL, FREDERICK L.
78.015

BOHNER, M.
83.013

BOISVENUE, A
82.276 82.193

BOLT BERANEK AND NEWMAN INC., CAMBRIDGE, MA.
76.048

BOLTON, RONALD
76.023

BOMBERGER, DOROTHY L., ED.
75.002

BOND, DEBORAH
83.159

BONNET, PENELOPE
74.017

BONNOR, G.M.
78.016

BOOTH, J.K.
82.284 76.024

AUTHOR INDEX

BOOZ, ALLEN, AND HAMILTON INC.
79.205 79.017

BOPP, MATTHIAS
83.223

BORDEN, F.Y.
73.092

BORGEFORS, G.
83.017

BOROUGH OF NORTH YORK. PUBLIC WORKS DEPARTMENT. ENGINEERING DIVISION, TORONTO, ONT.
75.031

BORUFKA, H.G.
82.082

BOS, J.
79.074

BOSS, DANIEL
83.117

BOSSLER, JOHN D.
75.033

BOSTON SURVEY CONSULTANTS INC., MA.
80.047 79.083 77.113

BOTBOL, JOSEPH MOSES
75.034

BOTTINI, NICHOLAS A.
77.026 72.015

BOUDREAU, JOHN
76.025

BOUILLE, FRANCOIS
81.134 78.017

BOUKNIGHT, WENDELL J.
70.029

BOULOGNE, P.
81.005

BOVAY ENG. INC. ALBUQUERQUE, N.M.
79.091

BOWATER INC., MANAGEMENT INFORMATION SERVICES
75.255

BOWEN, ROGER W.
75.034

BOX, ELGENE
79.019 79.018

BOYD, MICHAEL
80.072

BOYD, ROBERT W.
83.080 73.075

BOYD, W.E.
81.105

BOYKO, K.J.
82.259

BOYLE, A. RAYMOND
81.162 79.025 79.024 79.023 79.022 79.021
79.020 77.027 76.026 75.036 75.035 74.019
74.018 73.021 72.019 72.018 72.017 72.016
70.008 70.007 70.006

BRAASCH, H.W.
75.037

BRACKEN, P.A.
79.053 79.026 78.018

BRADLEY, D. ROSS
83.222 83.138 83.127 81.025

BRAMSON, IRWIN
83.095

BRANDENBERGER, A.J.
76.027

BRANDON, S.E.
75.077 75.038

BRANDT, B.A.
77.110

BRASS, J.A.
83.021

BRASSEL, KURT E.
83.223 83.221 83.119 81.199 81.198 81.197
79.132 79.027 78.020 78.019 77.030 77.029
77.028 76.116 75.039

BRAZILIAN INSTITUTE OF GEOGRAPHY AND STATISTICS, RIO DE JANEIRO, BRAZIL
75.087

BREVARD COUNTY PLANNING DEPARTMENT, TITUSVILLE, FL.
73.063

BRICE, WILLIAM C.
77.031

BRICKER, CAL D.
80.011

BRIGGS, DAVID
82.075

AUTHOR INDEX

BRIGHT, C. RICHARD
78.021

BRIGHT, J.
76.122

BRINK, GLEN E.
79.120

BRITAIN. DEPARTMENT OF THE ENVIRONMENT
75.094 73.022

BRITISH CARTOGRAPHIC SOCIETY
74.020

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY, PHOTOGRAMMETRIC ENGINEERING, VANCOUVER, B.C.
78.058

BRITISH COLUMBIA. MINISTRY OF ECONOMIC DEVELOPMENT
78.179

BRITISH COLUMBIA. TASK FORCE ON MAPPING REQUIREMENTS
78.022

BRKLACICH, MICHAEL
83.159

BROCK UNIVERSITY
79.105

BROCKMEIER, LANCE
78.023

BRODHEIM, E.
70.009

BROEKHUYSEN, MARTIN
83.101

BROGLIE, JAMES (MAJOR)
79.022 77.019

BROOK, A.J.
76.028

BROOKHAVEN NATIONAL LABORATORY. UPTON, N.Y.
78.050

BROOKS, KRISTINA M.
82.168 80.012 78.024

BROOME, FREDERICK R.
76.029 75.040 73.023

BROONER, WILLIAM G.
83.155 81.182 72.091

BROPHY, D.M.
73.024

BROTCHIE, J.F.
74.129

BROUGHTON, R.S.
79.154

BROWDEN, LESLIE
76.030

BROWN, DENNIS
78.025

BROWN, DWIGHT
73.119

BROWN, E.G.
75.041

BROWN, JEFF
77.032

BROWN, PERRY J.
81.076 80.010

BROWN, R.J.
83.231

BROWN, ROBERT F.
81.090

BROWN, ROBERT M.
83.032 83.030

BRUCE, W.D.
78.148

BRUCK, H.W.
76.169

BRUHA, GEORGE
83.200

BRUNORI, CARLO R.
79.005

BRUNSON, E.B.
78.026

BRYAN, M. LEONARD
83.206

BRYANT, NEVIN A.
83.041 79.028 77.033 77.008 76.031 75.042

BRYCH, SUSAN M.
78.080

BUCHHOLDT, J.
82.311

AUTHOR INDEX

BUCKNER, R. BEN
77.034

BUCKS COUNTY, PA. PLANNING COMMISSION
70.010

BUEDE, DENNIS M.
81.022

BUNCE, R.G.H.
75.043

BUNDE, DENNIS
77.099

BUNDESFORSCHUNGSANSTALT FUR LANDESKUNDE UND RAUMORDNUNG, BONN-BOD GODESBURG, GERMANY
75.198

BUNDY, T.R.
83.006

BUNEMAN, OSCAR P.
82.133

BUNKEV, JAMES
75.028

BUREAU OF LAND MANAGEMENT, WASHINGTON, D.C.
80.053

BUREAU OF MINES. PITTSBURGH MINING AND SAFETY RESEARCH CENTER
76.102

BUREAU OF MINES, PITTSBURGH, PA.
77.225

BURFORD, J.B.
78.027

BURK, C.F., JR.
75.044 73.025 72.020 70.011

BURKE, D. BARLOW
73.026

BURKHART, B.R.
80.013 79.029

BURNABY JOINT UTILITY MAPPING PILOT PROJECT, BURNABY, B.C.
77.102

BURNETT, R.A.
77.075

BURNS, P.L.
83.056

BURNS, TONY
82.206

BURRILL, GEORGE C.
76.112

BURROUGH, P. A.
81.179

BURTON, WARREN
79.030

BUTLER UNIVERSITY. REGIONAL ENVIRONMENTAL ASSESSMENT PROGRAM
78.088

BUTLER, KENT S.
77.162 77.036 77.035

BUTOT, LUIS
82.196

BUTTENFIELD, BARBARA PFEIL
83.187

BUTTON, LOLA J.
77.208

BUZZANELL, PETER J.
76.007

BYDLER, ROGER
77.037

BYLER, RICHARD P.
79.031 77.185

CADASTRAL SURVEY OF ZURICH, SWITZERLAND
80.063

CADASTRAL SURVEYING OFFICE, WEST GERMANY EIMSBUTTEL/HAMBURG, WEST GERMANY
75.037

CALCOMP
80.007

CALDWELL, DOUGLAS R.
82.128 80.014

CALDWELL, ELIZABETH N.
78.067

CALEF, C.E.
78.050

CALGARY POWER LTD. DIVISION OF LAND MANAGEMENT
75.041

AUTHOR INDEX

CALGARY REGIONAL PLANNING COMMISSION, REGIONAL PLANNING SERVICES
81.118

CALIFORNIA COMPUTER PRODUCTS OF CANADA LIMITED
80.114

CALIFORNIA INSTITUTE OF TECHNOLOGY. JET PROPULSION LABORATORY. PASADENA, CA.
77.033 76.032 76.031

CALIFORNIA POLYTECHNIC UNIVERSITY
74.076

CALIFORNIA STATE OFFICE OF PLANNING AND RESEARCH, SACRAMENTO, CA.
73.049 72.102

CALIFORNIA STATE UNIVERSITY, FRESNO, CA.
79.111

CALIFORNIA UNIVERSITY
81.087

CALIFORNIA UNIVERSITY DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
83.008

CALIFORNIA UNIVERSITY. LAWRENCE BERKELEY LABORATORY
78.177

CALIFORNIA UNIVERSITY. LIVERMORE
78.075

CALIFORNIA UNIVERSITY, DEPARTMENT OF GEOGRAPHY
81.080

CALIFORNIA UNIVERSITY, DEPARTMENT OF GEOGRAPHY. REMOTE SENSING UNIT
81.072

CALKINS, HUGH W.
82.326 77.041 77.040 77.039 77.038 76.157 76.155 76.154 73.027 72.067 72.066 72.065

CALKINS, JAMES A.
76.046 75.045 73.028

CALLAHAM, ROBERT Z.
77.042

CALLAHAN, GEORGE M.
83.195

CALMA TECHNICAL SUPPORT, RESTON, VA.
76.083

CALOGERO, V.
78.028

CALSPAN CORPORATION, BUFFALO, N.Y.
74.113

CAMARGO, INGRID G.G.R.
83.200

CAMBIER, JAMES L.
83.025

CAMBON, FRANCIS
73.113 72.005

CAMBRIDGE RESEARCH INSTITUTE
79.051

CAMBRIDGE UNIVERSITY
76.014

CAMERON, LYNN, ED.
79.211 79.087

CAMPBELL, W.J.
83.080

CAMPBELL, WILLIAM A.
75.046

CANADA CENTRE FOR GEOSCIENCE DATA
78.115

CANADA CENTRE FOR REMOTE SENSING, OTTAWA, ONT.
82.159 80.048 79.195 79.142 79.041

CANADA. DEPARTMENT OF AGRICULTURE. AGROMETEOROLOGY AND SOIL CLASSIFICATIONS SECTIONS
80.070

CANADA. DEPARTMENT OF AGRICULTURE. CENTRAL EXPERIMENTAL FARM
77.144

CANADA. DEPARTMENT OF AGRICULTURE. LAND RESOURCE RESEARCH INSTITUTE
80.069

CANADA. DEPARTMENT OF AGRICULTURE. RESEARCH BRANCH
81.206

CANADA. DEPARTMENT OF AGRICULTURE. SOIL RESOURCE INVENTORY
77.145

CANADA. DEPARTMENT OF ENERGY, MINES AND RESOURCES
81.122 80.003 78.148 75.279 75.202

CANADA. DEPARTMENT OF ENERGY, MINES AND RESOURCES. CANADIAN CENTRE FOR GEOSCIENCE DATA
75.268 75.257 75.240 75.231 75.222 75.202 75.190 75.189 75.137 75.123 75.118 75.099 75.034 75.029

AUTHOR INDEX

CANADA. DEPARTMENT OF ENERGY, MINES AND RESOURCES. CANADIAN INSTITUTE OF SURVEYORS
78.029

CANADA. DEPARTMENT OF ENERGY, MINES AND RESOURCES. PUBLIC RELATIONS AND INFORMATION SERVICES
75.097

CANADA. DEPARTMENT OF ENERGY, MINES AND RESOURCES. SURVEYS AND MAPPING BRANCH
78.154 76.077 75.133 75.030 73.068 73.067

CANADA. DEPARTMENT OF ENERGY, MINES AND RESOURCES. TOPOGRAPHICAL SURVEY
78.187

CANADA. DEPARTMENT OF FISHERIES AND ENVIRONMENT. FOREST MANAGEMENT INSTITUTE
77.153

CANADA. DEPARTMENT OF FISHERIES AND ENVIRONMENT. INLAND WATERS DIRECTORATE. WATER RESOURCES BRANCH, OTTAWA, ONT.
78.182

CANADA. DEPARTMENT OF FISHERIES AND ENVIRONMENT. LANDS DIRECTORATE
78.108

CANADA. DEPARTMENT OF PUBLIC WORKS
71.008

CANADA. DEPARTMENT OF REGIONAL ECONOMIC EXPANSION
77.199 77.198 77.062

CANADA. DEPARTMENT OF STATISTICS. INTEGRATION AND SYSTEMS COORDINATION GROUP
77.188

CANADA. DEPARTMENT OF STATISTICS. OFFICE OF THE SENIOR ADVISOR ON INTEGRATION
77.191

CANADA. DEPARTMENT OF STATISTICS. SPATIAL SYSTEMS SECTION
77.251

CANADA. DEPARTMENT OF THE ENVIRONMENT
72.021

CANADA. DEPARTMENT OF THE ENVIRONMENT. FOREST MANAGEMENT INSTITUTE. FOREST RESOURCE DATA PROGRAMME
78.016

CANADA. DEPARTMENT OF THE ENVIRONMENT. LANDS DIRECTORATE
82.320 80.042 76.146 76.145 73.083

CANADA. DEPARTMENT OF THE ENVIRONMENT. LANDS DIRECTORATE. LAND DATA SYSTEMS DIVISION
80.068 77.043

CANADA. DEPT. OF ENERGY, MINES AND RESOURCES. CENTRE FOR MINERAL AND ENERGY TECHNOLOGY, OTTAWA, ONT.
79.196

CANADA. DOMINION BUREAU OF STATISTICS, CENSUS DIVISION, GEOGRAPHY SECTION
71.042

CANADA. GEOLOGICAL SURVEY
75.123 75.099

CANADA. LAND INVENTORY PROGRAMME. LANDS DIRECTORATE
73.029

CANADA. MINISTRY OF STATE FOR URBAN AFFAIRS
77.241 77.236 77.211 77.200 77.199 77.192
77.176 77.165 77.159 77.158 77.144 77.139
77.130 77.129 77.126 77.111 77.102 77.098
77.096 77.090 77.083 77.082 77.076 77.068
77.066 77.032 75.263

CANADA. MORTGAGE AND HOUSING CORPORATION
81.159

CANADA. NATIONAL CAPITAL COMMISSION. COMPUTER INFORMATION SERVICES
72.022

CANADA. NATIONAL CAPITAL COMMISSION. COMPUTER INFORMATION SYSTEM
70.047

CANADA. NATIONAL RESEARCH COUNCIL
83.218 82.152 82.025 81.007 79.223 77.254
77.011 74.014

CANADA. NATIONAL RESEARCH COUNCIL. DIVISION OF ELECTRICAL ENGINEERING
77.012

CANADA. NATIONAL RESEARCH COUNCIL. PHOTOGRAMMETRIC RESEARCH, OTTAWA, ONT.
78.099 75.280

CANADA. REGIONAL PLANNING INFORMATION SYSTEMS DIVISION
72.023

AUTHOR INDEX

CANADA. SPATIAL DATA TRANSFER COMMITTEE
79.032

CANADA. STATISTICS CANADA
76.174 76.024 71.009

CANADA. STATISTICS CANADA. ADVISOR ON ENVIRONMENTAL STATISTICS
78.065

CANADA. STATISTICS CANADA. CENSUS AND HOUSEHOLD SURVEYS FIELD OPERATIONS BRANCH. SPATIAL SYSTEMS SECTION
80.056 80.015

CANADA. STATISTICS CANADA. CENSUS DIVISION
78.175

CANADA. STATISTICS CANADA. CENSUS FIELD
76.173

CANADA. STATISTICS CANADA. GENERAL SURVEY SYSTEMS DIVISION, OTTAWA, ONT.
75.191

CANADA. STATISTICS CANADA. METHODOLOGY AND SYSTEMS BRANCH
72.024

CANADA. STATISTICS CANADA. OFFICE OF THE SENIOR ADVISOR ON INTEGRATION
79.033

CANADA. STATISTICS CANADA. SPATIAL RESEARCH AND DEVELOPMENT GROUP
78.043

CANADA. STATISTICS CANADA. STANDARDS DIVISION
78.079 78.030

CANADA. SURVEYS AND MAPPING BRANCH. AUTOMATED CARTOGRAPHY SECTION
78.183

CANADA. SURVEYS AND MAPPING BRANCH. PHOTOGRAMMETRICAL ENGINEERING SECTION, OTTAWA, ONT.
78.003

CANADA, NATIONAL DEFENCE HEADQUARTERS, OTTAWA
80.005

CANADIAN CENTRE FOR GEOSCIENCE DATA, OTTAWA
73.025

CANADIAN COUNCIL ON SURVEYING & MAPPING
82.309 82.308 82.307 82.003

CANADIAN FORESTRY SERVICE. PACIFIC FOREST RESEARCH CENTRE
73.127

CANADIAN GEOGRAPHIC
79.055

CANADIAN HYDROGRAPHIC SERVICE. CARTOGRAPHIC SYSTEM MAINTENANCE AND DEVELOPMENT
77.091

CANADIAN HYDROGRAPHIC SERVICE, OTTAWA, ONT.
73.059

CANADIAN INSTITUTE OF SURVEYING. EDMONTON AND CALGARY BRANCHES
75.271 75.270 75.237 75.229 75.217 75.201 75.162 75.146 75.113 75.041

CANADIAN INSTITUTE OF SURVEYING. LAND SURVEY COMMITTEE
75.271 75.270

CANADIAN PETROLEUM ASSOCIATION. SURVEY AND MAPPING COMMITTEE
75.271 75.270 75.237 75.229 75.217 75.201 75.162 75.146 75.113 75.041

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS
75.271 75.270 75.237 75.229 75.217 75.201 75.162 75.146 75.113 75.041

CANADIAN TRANSPORTATION COMMISSION
73.057 72.021

CANPLAN MANAGEMENT SERVICES LIMITED
77.190 77.189

CAPE TOWN ENGINEER'S DEPARTMENT. TECHNICAL MANAGEMENT SERVICES, CAPE TOWN, SOUTH AFRICA
78.131

CAPRARO, GERARD T.
74.021

CAPRIO, J.
74.022

CARBALLO, S.
82.048

CARBAUGH, LARRY W.
75.047

CARBEAU, ANDRE B.
75.155

CARDENAS, A. F.
81.174

AUTHOR INDEX

CARDEW, RICHARD
74.023

CARDINAL, AURELE
82.190 82.189

CARGILL, S.M.
76.033

CARLBERG, EDWARD F.
75.048 73.030

CARLETON UNIVERSITY. DEPARTMENT OF GEOGRAPHY, OTTAWA, ONT.
80.099 77.215 76.174 76.173 76.168 76.167
76.149 76.148 76.147 76.145 76.124 76.090
76.077 76.024 76.014 76.011 75.236 73.126
72.099 71.069

CARLETON UNIVERSITY, OTTAWA, ONT.
78.183 78.155 78.152 78.130 78.129 78.108
78.048 78.043 78.008 77.216 77.214

CARLIN, CYRIL B.
80.016 74.024 73.031 71.011 71.010

CARLING, RICHARD
80.051 79.099

CARLSON, E.D., ET AL.
74.025

CARLSON, GEROW M.
75.049

CARLSON, JAMES R.
82.200

CARLSSON, E.
83.035

CARON, L.M.
83.077

CARR, W. HOWARD
76.034 76.026

CARRIGAN, BRIAN
80.018 80.017 79.037 79.036 79.035 79.034

CARROLL, ROBERTA
83.047

CARTER, BRADLEY D.
79.148

CARTER, JAMES R.
80.019

CARTER, M.D.
76.036 76.035 76.033

CARTER, R.S.
73.014 72.007

CARTER, VIRGINIA
76.103

CARTWRIGHT, VERN W.
76.037

CASSIRAME, P.
76.069

CASTONGUAY, REJEAN
79.180

CASVAND, T.
81.115

CASWELL, VIRGINIA
74.026

CATHELINO, PETER J.
79.173

CAULKINS HUGH W.
82.266

CENT. STATISTICAL SERV., QUEEN'S PARK, N.B.
76.136

CENTER FOR GOVERNMENTAL RESEARCH INC., ROCHESTER, N.Y.
78.169 78.097

CENTRAL BOARD FOR REAL ESTATE DATA, GAVLE, SWEDEN
77.234 77.202 76.124

CENTRAL INTELLIGENCE AGENCY
77.044

CENTRE D'ETUDE SPATIAL DES RAYONNEMENTS, TOULOUSE, FRANCE
76.069

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE. SERVICE DE LA CARTE DE LA VEGETATION, TOULOUSE, FRANCE
73.113 72.005

CERES, MARIE
81.088

CESARIO, A. LEE
80.020

CHAMARD, ROGER R.
83.124 82.223 78.031 74.027

CHAMPAIGN COUNTY REGIONAL PLANNING COMMISSION
73.034 73.033 73.032

AUTHOR INDEX

CHAN, F. KENNETH
75.050 73.016

CHANG, C.C.
76.038

CHAPMAN, CAROL A.,ED.
78.136

CHAPPAS, WALTER J.
78.032

CHARLES RIVER ASSOCIATES, INC. BOSTON, MA.
79.038 78.033

CHARLOTTESVILLE, VA.
78.089

CHARTERS, T.D.
77.106

CHATTERTON, WILLIAM A.
80.021 77.045 76.040 76.039 75.051 71.012

CHEN, PI-FUAY
82.040

CHENG, C.F.
83.030

CHENG, K.
70.013 70.012

CHERRY, L.L.
82.091

CHESTERFIELD COUNTY, VA.
79.144

CHICAGO AERIAL SURVEY, SILVER SPRING, MD.
80.001

CHICHKAN, I.V.
82.088

CHIESA, J.R.
79.175

CHISMON, H.J.
75.165

CHOCK, M.I.
82.263 82.169 81.174

CHOW, L.R.
81.063

CHOW, W.
83.113 82.279 82.213

CHRISMAN, NICHOLAS R.
83.185 79.136 79.080 78.034 77.047 77.046 76.125 76.042 76.041 76.023 75.182

CHRIST, FRED
75.052

CHRISTENSEN, N.C.
82.024

CHRISTENSEN, ROBERT E.
71.013

CHRISTIANSSON, GERTH
77.048

CHRZANOWSKI, ADAM
79.191 79.014 77.049 72.025

CHU, N.Y.
79.039

CHU, WEN-SEN
81.205

CHULVICK, CHARLES E.
82.170 79.040

CHUN, DAN
78.035

CHURCHILL, ROBERT R.
80.022

CIA, RESTON, VA.
75.011

CIBULA, W.G.
81.006

CICONE, RICHARD C.
77.050

CIHLAR, JOSEF
79.195 79.041

CITY AND COUNTY OF DENVER. POLICE DATA CENTRE
76.043

CITY OF ATLANTA. SYSTEMS AND PROGRAMMING DIVISION
77.073 77.072

CITY OF CALGARY
80.109 80.028 78.171 75.053

CITY OF CALGARY. MANAGEMENT SYSTEMS DEVELOPMENT DEPARTMENT
78.001 77.177 77.118 77.005 75.113 74.098

CITY OF CHARLOTTE, N.C. USAC PROJECT
75.055 75.054 72.026

CITY OF DES MOINES, IA.
73.040 73.039 72.027

CITY OF DES MOINES, IA. USAC PROJECT
73.038 73.037 73.036 73.035

CITY OF DETROIT. ASSESSORS DEPARTMENT
79.119

CITY OF DETROIT. FINANCE/ASSESSMENTS DIVISION
80.090

CITY OF EDMONTON. PLANNING DEPARTMENT
73.041 70.014

CITY OF HAMILTON. PLANNING DEPARTMENT. HAMILTON, ONT.
72.028

CITY OF KANSAS
79.194

CITY OF LONG BEACH, CA.
73.043

CITY OF LONG BEACH, CA. INFORMATION SERVICES DIVISION
75.068

CITY OF LONG BEACH, CA. USAC PROJECT
73.042

CITY OF LOS ANGELES. COMMUNITY ANALYSIS BUREAU
70.015

CITY OF LOS ANGELES. DEPARTMENT OF CITY PLANNING
76.044 75.056 74.029 74.028

CITY OF MILWAUKEE. CENTRAL ELECTRONIC DATA SERVICES DEPARTMENT
78.087 77.158 77.126

CITY OF NEW YORK, DEPARTMENT OF CITY PLANNING
77.013

CITY OF PORTLAND, MODEL CITIES PROGRAM, INFORMATION AND EVALUATION
72.088

CITY OF READING, PA. USAC PROJECT
75.057 74.030 71.015 71.014 70.016

CITY OF SEATTLE. DEPT. OF COMMUNITY DEVELOPMENT
77.123

CITY OF ST. PAUL, MN. USAC PROJECT
71.016

CITY OF STOCKTON. DEPARTMENT OF PLANNING, STOCKTON, CA.
75.188

CITY OF TORONTO MANAGEMENT SERVICES (CENTRAL PROPERTY REGISTER)
77.068

CITY OF TORONTO MANAGEMENT SERVICES DEPARTMENT
78.042

CITY OF TORONTO PLANNING BOARD
79.052

CITY OF TORONTO PLANNING BOARD RESEARCH, TORONTO, ONT.
77.111

CITY OF VICTORIA, B.C.
72.032

CITY OF WICHITA FALLS, TX.
75.058

CITY OF WICHITA FALLS, TX. USAC PROJECT
73.044

CITY OF WINSTON-SALEM, MANAGEMENT SERVICES DEPARTMENT, WINSTON-SALEM, NC.
78.114

CITY OF WITCHITA FALLS. PLANNING DEPARTMENT
77.180

CITY UNIVERSITY OF NEW YORK. DEPARTMENT OF GEOLOGY AND GEOGRAPHY
76.078

CL-54 DALEY CENTER, CHICAGO, IL.
80.057

CLAESSON, T.
81.086

CLAPP, JAMES L.
80.084 80.023 77.052 77.051 77.045 76.045

CLARITAS CORPORATION, ROSSLYN, VA.
80.006

CLARK, ALLEN L.
77.053 76.047 76.046

CLARK, B.A.
83.072

CLARK, DAVID W.
81.014

CLARK, J.
82.147

CLARK, J.M.
78.027

CLARK, JAMES H.
82.081

CLARK, JAMES W.
77.054

CLARK, JOHN R.
78.036

CLARK, RICHARD
79.020

CLARK, ROBERT M.
80.024

CLARKE, A.L.
82.261 82.260 82.171

CLARKSON COLLEGE OF TECHNOLOGY. DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
77.129 77.128

CLASSAL, A.A.
78.055

CLASSEN, DANIEL B.
81.124

CLASSEN, RONALD J.
77.055

CLAVETTE, PAUL J.
77.232

CLAYTON, C.
81.080

CLAYTON, K.
71.017

COAN, GERRY
82.191 78.037

COBOURN, LEE A.
71.018

COBURN, V.L.
81.172

CODE, ROBERT
78.038

COGEODATA, INTERNATIONAL UNION OF GEOLOGICAL SCIENCES
75.268 75.257 75.240 75.231 75.222 75.202
75.190 75.189 75.137 75.123 75.118 75.099
75.034 75.029 72.052

COHEN, MARC-DAVID
76.112

COINER, JERRY C.
81.145 77.056

COKER, CHARLOTTE E.
83.194

COLE, E.J.
70.017

COLEMAN, DEREK J.
75.059

COLL. OF CIV. ENG., BUCHAREST, ROMANIA
78.085

COLLINS AND MOON LTD.
82.090

COLLINS, ALLAN
76.048

COLLINS, S.
72.094

COLLINS, STANLEY H.
83.188 82.210 80.027 80.026 80.025 78.039
75.060

COLORADO SCHOOL OF MINES. DEPARTMENT OF GEOLOGY
80.104

COLORADO STATE UNIVERSITY. DEPARTMENT OF RANGE SCIENCE, FORT COLLINS
77.132

COLUMBIA UNIVERSITY. DEPARTMENT OF GEOGRAPHY, NEW YORK, N.Y.
77.056

COLUMBIA UNIVERSITY, TRENTON, N.J.
75.112

COLVILLE CONFEDERATED TRIBES. NESPELEM, WA.
78.145

COLVILLE, DAVID
83.129

COLVOCORESSES, ALDEN P.
82.071 78.040 70.018

COLWELL, J.E.
83.088 81.077

COLWELL, ROBERT N. (ED.)
83.098

AUTHOR INDEX

COMARC DESIGN SYSTEMS, SAN FRANCISCO, CA.
80.108 80.031 79.112 78.041

COMEAU, M.A.
83.191 80.068 79.042

COMISION DE ESTUDIOS DEL TERRITORIO NACIONAL, MEXICO CITY, MEXICO
75.150

COMMISSION 4. OF THE INTERNATIONAL SOCIETY OF PHOTOGRAMMETRY
78.029

COMMUNICATIONS RESEARCH CENTRE
82.134

COMPUTER CORPORATION OF AMERICA. CAMBRIDGE, MA.
80.051 79.099 77.197

COMPUTER SCIENCES CORPORATION. SYSTEM SCIENCES DIVISION, SILVER SPRING, MD.
75.050 73.016

COMPUTING DEVICES COMPANY
78.129

CONGALTON, RUSSELL G.
82.039

CONHEAD, B.A.
77.110

CONNECTICUT. DEPARTMENT OF ENVIRONMENTAL PROTECTION
77.218

CONNELLY, D.S.
71.019

CONSERVATOIRE NATIONAL ARTS-ET-METIERS, ECOLE SPECIALE DES TRAVAUX PUBLICS, 20 AVENUE PAUL APPELL, 75014 PARIS, FRANCE
78.051

CONSTANTINE, JOHN
76.034

CONTIN, S.
82.291

CONTRA COSTA COUNTY PLANNING DEPARTMENT
70.019

CONTROL DATA CORPORATION. DIGITAL IMAGE SYSTEMS DIVISION, MINNEAPOLIS, MN.
75.177

CONVERSE WARD DAVIS DIXON, CALDWELL, N.J.
80.038

CONWAY, R.G.
80.028

COOK, B.G.
77.057 74.031 72.092

COOK, G.C.
77.058

COOK, HENRY R.
76.060 76.049 75.061

COOK, ROBERT N.
79.043 77.059 76.051 76.050 74.032 73.046

COOKE, DONALD F.
79.044 77.060 76.052 74.146 74.033 73.045 71.021 71.020

COOKE, L.J.
74.034 71.022

COOPER, ARTHUR W.
76.053

COOPER, M.A.
74.116

COPPOCK, J.T.
75.062

CORBEIL, JEAN
82.190 82.189

CORBETT, JAMES P.
75.063 73.047 72.029 71.023

CORBIN, CALVIN C.
72.035

CORMACK, R.S.
77.061

CORNELL UNIVERSITY. WATER RESOURCES AND MARINE SCIENCES CENTER. ITHACA, N.Y.
74.101

CORNWELL, BRUCE
83.189

CORNWELL, SALLY BAY
77.206

CORVEN, DAVID J.
80.029

COSTANZO, D.J.
83.065

COSTELLO, THOMAS R.
79.045

COSTON, CHARLES E.
76.054

COUNCIL OF MARITIME PREMIERS
77.190 77.189

COUNCIL OF MARITIME PREMIERS. LAND REGISTRATION AND INFORMATION SERVICE
80.091 79.180 79.177 79.176 79.161 79.147
79.129 79.078 79.046 78.133 77.178 77.130
77.096 77.064 77.063 77.062 76.142 76.121
76.055 76.025 75.217 75.204 75.203

COUNCIL OF MARITIME PREMIERS. LRIS. SYSTEMS AND PLANNING DIVISION
76.134

COUNCIL OF MARITIME PREMIERS, HALIFAX, N.S.
77.211 76.135

COUNCIL OF STATE GOVERNMENTS
82.129 74.035

COUNCIL ON ENVIRONMENTAL QUALITY, WASHINGTON, D.C.
79.081

COUNTY OF FAIRFAX, VA.
72.030

COUNTY OF SANTA CLARA. CENTER FOR URBAN ANALYSIS, SAN JOSE, CA.
78.130

COWEN, DAVID J.
83.165 79.132 79.049 79.048 79.047 76.056

COWIE, S.P.
72.031

COWSERT, JOHN, ED.
79.211 79.087

COX, CARLETON, W.
79.050

COX, LAWRENCE H.
75.064

COX, T.L.
77.065

CRAIG, TOM
74.036

CRAIG, WILLIAM JAMES
77.066 76.057

CRAIN, I. K.
83.164

CRANE, EDWARD
82.201

CRANE, ROBERT K.
81.012

CRAVEN, C.W., ET AL.
74.037

CRAWLEY, B.G.
74.038

CRELLIN, RONALD E., ED.
78.156 78.139 78.134 78.130 78.128 78.127
78.117 78.114 78.106 78.103 78.097 78.095
78.089 78.088 78.087 78.077 78.049 78.037
78.014 70.020

CREMONT, DANIEL
80.030

CRESWELL, CLAUDE
72.015

CREVO, CHARLES G.
75.065

CRISP, COLIN F.G.
72.032

CRIST, E.P.
83.015

CROMBIE, MICHAEL A.
82.030 81.033 74.057

CROMLEY, ROBERT
75.173

CRONE, MICHAEL S.
83.025

CROSLEY, POWEL V.
79.047

CROSS, RICHARD HUNTER (III)
79.051

CROSSFIELD, JAMES K.
83.148

CROSWELL, PETER L.
83.160

CROWDER, ROBERT
72.033

CROWDER, WM. KENT
80.031

CSATI, ERNO, ED.
76.058 74.114 74.040 74.039

CSIRO. DIVISION OF LAND USE RESEARCH, CANBERRA, AUSTRALIA
77.152 77.058 77.057

CSIRO, MOUNT WAVERELEY, VICTORIA, AUSTRALIA
78.070

CUMELLA, K.E.
82.120

CURTISS, JANE B.
80.032

CY CHIT-SZE, YEUNG
79.052

CZARNECKI, WALTER
74.137

D'ANDREA, JR., R.F.
82.055

DAILY, M.
81.061

DAKAN, A. WILLIAM
83.143 82.187

DALHOUSIE UNIVERSITY
82.243

DALLAM, WILLIAM C.
81.009

DALTON, J.T.
79.053 79.026 78.018

DALY, J.R.
70.033

DAMES & MOORE, LOS ANGELES, CA.
80.085

DAMON, STANLEY
79.106

DANGERMOND, JACK P.
83.166 83.161 82.325 80.033 79.054 77.067
76.059 74.041 73.048 71.056

DANIELS, K.L.
82.041

DANTIN, ELVIN J.
75.265

DARRAGH, IAN
79.055

DARTMOUTH COLLEGE. DEPARTMENT OF GEOGRAPHY, HANOVER N.H.
73.118

DATA RESOURCES, INC.
80.034

DATE, C. J.
81.165

DATLEN, ANDY R.
78.042 77.068

DAVENPORT, RUSSELL, ED.
77.069

DAVEY, P.G.
77.070

DAVIS, CHRISTIAN
74.042

DAVIS, DALE M.
82.029

DAVIS, DARRYL W.
80.035 79.209

DAVIS, F.G.F., JR.
79.056

DAVIS, G.
81.077

DAVIS, J.
75.241

DAVIS, JOHN C., ED.
75.278 75.277 75.266 75.233 75.226 75.225
75.209 75.208 75.186 75.183 75.175 75.119
75.094 75.067 75.066 75.062

DAVIS, PAUL E.
77.071

DAVIS, VICTOR M., JR.
77.073 77.072

DAWSON, N.M.
77.074

DAYKIN, S.E.
78.150

DCIEM
82.100

DE FLORIANI, L.
81.060

DE GIOVANNI, FRANK F.
81.075

AUTHOR INDEX

DE HOOP, D.
72.093

DE MONTE, ROBERT J.
73.049

DE VROEGE, FRANS
82.277 82.017 82.016

DEAN, EDSON T.
75.081

DEAN, R.D.
72.034

DEBERTIN, DAVID L., ED.
78.136

DECISION DYNAMICS CORPORATION
80.036

DECKER, J.
81.020

DEDRICK, DREW
80.037

DEECKER, GORDON F.P.
78.043

DEFENSE MAPPING AGENCY
82.282

DEFENSE MAPPING AGENCY AEROSPACE CENTER, ST. LOUIS AIR FORCE STATION, MO.
74.137

DEFENSE MAPPING AGENCY AEROSPACE CENTER: CARTOGRAPHY DEPARTMENT
75.136

DEFENSE MAPPING AGENCY TOPOGRAPHIC CENTER, WASHINGTON D.C.
75.061

DEFENSE MAPPING AGENCY, WASHINGTON, D.C.
78.132

DEFORTH, PETER W.
76.006

DEGANI, AVI
78.044

DEGROFF, WILLIAM J.
75.068

DEIMEL, L.E., JR.
78.045

DEITER, L.C.
75.045

DEJESUSPARADA, N.
82.059 81.032

DELAN, R.
75.005

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
79.031

DEMELLO, L.S.H.
81.005

DENENBERG, STEWART A.
72.035

DENVER WATER DEPARTMENT
80.020

DERAMUS, JUDSON DAVIE, JR.
79.057

DERMANIS, A.
83.002

DESALVO, JOSEPH M.
80.038

DESCHENE, WALLACE A.
81.101

DESTEIGUER, J.E.
81.048

DETTORI, G.
81.060

DEVEREUX, B.J.
78.046

DEVINE, EDWARD P.
76.109

DEVORKIN, DONALD
74.042

DEVRIES, M.
82.105

DEZUR, ROBERT S.
79.134

DIAL, O.E.
76.137 75.223 73.050 72.036

DICKIE, G.J.
74.043 72.115

DICKINSON, DR. W.T.
80.039

DIEGERT, CARL
75.178

DIELLO, JOSEPH
76.143 76.060 76.026

DILLMAN, R.D.
74.044

DIONNE, P.J.
77.075

DISON, D.W.
74.045

DIVI, S.R.
75.082

DIXON, DAN G.
76.022

DIXON, DONNA M.
83.176

DOBNER, HORST K.
79.058 75.069 74.046

DOBOS, NICK E.
75.070

DOBSON, J.E.
76.089

DOBSON, M.W.
82.089

DOE
79.222

DOLE, W.E.
78.047

DOMARATZ, MICHAEL A.
82.172

DOMINQUEZ, O.
82.048

DOMSCH, RONALD E.
82.201 77.076 75.071 74.094 74.091

DONE, P.
82.236

DONNELLY, JOHN H.
76.061

DORFMAN, J.
76.150

DORIGO, GUIDO
83.223

DOSS, C.L., II
78.045

DOUGENIK, JAMES A.
79.059

DOUGLAS, DAVID H.
83.100 82.164 79.060 78.048 77.251 77.215
77.198 77.191 77.188 77.153 77.145 77.091
77.077 77.012 75.184 73.052 73.051 70.049

DOUGLASS, MICHAEL M.
83.155

DOWLING, M.J.
79.061

DOWNARD, ALLEN F.
78.049 77.078

DOWNING, JAMES A.
82.029

DOYLE, RAYMOND A. (ED.)
82.164

DRACUP, JOSEPH F.
82.033

DRAKE, JOSEPH S.
73.053

DREW, JOSEPH
77.079

DRYSDALE, F.R.
78.050

DU, KWEN M.
75.072

DUBUISSON, BERNARD L.Y.
78.051

DUCKER, KENNETH J.
71.025

DUDA, RICHARD O.
77.080

DUDDLESON, WILLIAM
74.104

DUDYCHA D. J.
81.178

DUEKER, KENNETH J.
79.063 79.062 77.255 77.134 77.083 77.082
77.081 76.063 76.062 75.104 75.076 75.075
75.074 75.073 74.117 74.048 74.047 73.054
73.053 72.095 72.092 72.067 72.066 72.065
72.040 72.039 72.038 72.037 71.024

AUTHOR INDEX

DUGGIN, MICHAEL J.
82.173

DUINKER, PETER N.
82.243 81.195

DUMANOIR, J.L.
78.010

DUMANSKI, J.
81.046 75.077 75.038

DUMONTELLE, P.B.
70.046

DUNGAN, WILLIAM, JR.
79.064

DUNHAM, ALLISON
75.078 74.049

DUNN, J.W., III
78.078

DUNNE, THOMAS
82.072

DUPREE, ROBERT L.
79.065

DURBECK, ROBERT C.
79.025

DURFEE, R.C.
76.106 76.099 76.065 74.050

DURHAM UNIVERSITY. DEPARTMENT OF GEOGRAPHY, ENGLAND
79.071

DUSHENE, WALLACE A.
81.189

DUTTON, GEOFFREY H.
83.101 79.067 79.066 78.052 77.084

DUTTON, W.H.
82.102

DWINELL, L. DAVID
78.053

DYBA, JEROME E.
74.051

DYE, E. JOYCE
81.037

DYE, R.
82.060

DYER, ALLAN G.
83.159 81.151

DYER, C.R.
82.285 82.245

DYER, ROBERT S., JR.
81.149

DYETT, MICHAEL V.
77.085

E.I. DU PONT DE NEMOURS & CO. SAVANNAH RIVER LABORATORY, AIKEN, SC.
80.064

EASTERN FIELD OPERATION CENTER
77.023

EASTON, CAM H.
75.079 74.052

EBER, LAURENCE E.
82.026

EBERHART, RUSSELL C.
75.080

EBY, J.R.
82.011

ECOLE NATIONALE SUPERIEURE DES MINES DE PARIS
75.137

ECOLOGICAL ANALYSTS, INC.
82.132

ECOLOGISTICS LIMITED, KITCHENER, ONT.
75.059

ECOLOGY CONSULTANTS, CO.
77.088

ECONOMIC IMPROVEMENT CORPORATION, CHARLOTTETOWN, P.E.I.
71.030

ECONOMIC INFORMATION SYSTEMS, INC.
80.009

ECONOMICS, STATISTICS, AND COOPERATIVES SERVICE. NATURAL RESOURCE ECONOMICS DIVISION, WASHINGTON, D.C.
78.180

EDELEN, ROBERT B.
83.105 83.016

EDGERTON, CHARLES
76.064

EDINBURGH UNIVERSITY
76.168 76.167

AUTHOR INDEX

EDMONDSON, FRANK P.
76.119

EDSON, DEAN T.
79.068 77.086 74.053 72.041

EDWARDS, DANIEL L.
83.090

EDWARDS, KATHLEEN
75.024

EDWARDS, R.G.
76.099 76.065

EDWARDS, ROBERT
83.224

EICHELBERGER, PEIRCE
82.202

EICHHORN, GERHARD
82.207

EKLUND, OLLE
77.087

EKLUNDH, J.O.
82.110 82.015

EKSTROM, T.
75.029

ELASSAL, ATEF A.
78.054

ELDER, EVIE, ED.
78.174 78.169 78.157 78.092 78.080 78.036

ELDER, LINDA
82.163

ELECTRONICS RESEARCH LABORATORY, ADELAIDE, AUSTRALIA
79.061

ELEY, N.G.
78.056

ELIASON, E.M.
75.024

ELLEFSON, RICHARD
74.054

ELLIOTT, MADONNA, ED.
76.156 76.151 76.143 76.125 76.119 76.116
76.109 76.101 76.091 76.066 76.060 76.041
76.034 76.029 76.026 76.023 76.022 76.001

ELLIS, SCOTT L.
77.088

ELORANTA, K.
82.287 82.286

ELPHINGSTONE, GERALD M.
78.057

ELSNER, GARY H.
75.243

ELSTON, M.
83.198

EMERSON, C.J.
81.107 79.162

EMERY, HENRY A
82.103

EMERY, K.A.
77.151 77.089

ENERGY RESOURCE CONSERVATION BOARD. PIPE LINE DEPARTMENT
75.162

ENERGY RESOURCES DATA SYSTEM
79.152 77.174

ENGELMAN, LYNN
83.158

ENGLAND. FORESTRY RESEARCH STATION. FORESTRY COMMISSION
79.198

ENGLAND. ORDNANCE SURVEY REVIEW COMMITTEE
79.069

ENGLAND. ORDNANCE SURVEY, SOUTHAMPTON, ENGLAND
78.158

ENGSTROM, RICHARD L.
80.112

ENSLIN, W.R.
77.219

ENVIRONMENT CONSULTANTS, INC., LAKEWOOD, CO.
78.162

ENVIRONMENT PROTECTION DIVISION. DEPARTMENT OF NATURAL RESOURCES
80.088

ENVIRONMENTAL CONSERVATION SERVICE TASK FORCE FEDERAL ENVIRONMENT ASSESSMENT REVIEW OFFICE (FEARO)
81.203

AUTHOR INDEX

ENVIRONMENTAL IMPACT ASSESSMENT PROJECT
78.024

ENVIRONMENTAL PLANNING CONSULTANT
76.094

ENVIRONMENTAL RESEARCH AND TECHNOLOGY, INC.
81.012

ENVIRONMENTAL RESEARCH INST. OF MICHIGAN
83.088 82.049 81.077 79.126 77.050 74.044

ENVIRONMENTAL RESEARCH INST. OF MICHIGAN, APPLICATIONS DIV.
82.060

ENVIRONMENTAL RESEARCH INST. OF MICHIGAN, INFRARED AND OPTICS DIV.
83.015

ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE, REDLANDS, CA.
80.033 79.054 77.067 76.067

EPSTEIN, EARL F.
79.070 77.045 76.045

ERDAS, INC. (EARTH RESOURCES DATA ANALYSIS SYSTEMS), ATLANTA, GA.
80.041

ERICKSEN, R.H.
79.062 77.090

ERICKSON, M.D.
77.075

EROS DATA CENTER
83.043

ERPENBACH, CHARLES A.
82.044

ESKELAND, L.
82.108

ESPARZA, FERNANDO
73.063

ESTES, J.
82.106 74.137 72.091

ETHIER, J.M.
77.174

ETTARID, M.
82.262

EUROPEAN SPACE AGENCY
82.061

EVANGELATOS, TONY
77.091

EVANS, IAN S.
80.089 79.071

EVATT, B. JR.
81.057

EVERETT, M.J.
78.058

EWALD, ROBERT H.
75.086

EWALD, WILLIAM R., JR.
77.093 77.092 73.055

EXPERIMENTAL CARTOGRAPHY UNIT. NATURAL ENVIRONMENT RESEARCH COUNCIL OF GREAT BRITAIN, LONDON, ENGLAND
75.027

EXXON PROD. RES. CO., HOUSTON, TX.
78.047

F.M. WEAVER ASSOCIATES, INCORPORATED, CHARLOTTE, N.C.
77.236 77.235

FABBRI, ANDREA G.
81.115 75.083 75.082 73.056

FAHY, DAVID P.
78.060

FAIG, WOLFGANG
78.059 75.084

FAINTICH, MARSHALL B.
83.093 82.067 81.103 81.099 81.017 78.060

FAIRFAX COUNTY GOVERNMENT. DIVISION OF MAPPING
79.122

FAIRFAX COUNTY, VA.
72.054

FALCIDIENO, B.
81.060

FALLAT, COLLING
77.088

FALSITZ, R.
79.072

FARNSWORTH, GEORGE L.
75.085 72.042 71.027 71.023

FARRELL, JERRY
79.099

FARRELL, M.P.
82.041

FASCHING, GERHARD
79.146

FAULKNER, S. MICHAEL
77.144

FAUQUIER, JOHN E.
83.150

FAUST, N.L.
83.042 80.041 79.192

FEDDES, ROBERT G.
74.055

FEDERATION OF ROCKY MOUNTAIN STATES, INC. DENVER, CO.
77.205 77.203

FEDERATION OF ROCKY MOUNTAIN STATES, INC. FORT COLLINS, CO.
78.135 77.204 77.192

FEESER, LARRY J.
75.086

FEGEAS, ROBIN G.
79.130 79.101 77.170 77.169 77.095 77.094

FEINBERG, KENNETH
79.048

FELSBURY, ROBERT W.
80.066

FERGUSON, HELAMAN, R.P.
71.028

FERGUSON, JAMES E.
74.056

FERIVERDA, GERALD J.
70.021

FESSENDEN, R.J.
83.219

FETTER, LORRAINE
80.026

FFOLLIOTT, PETER F.
78.107

FIALHO, JOSE KLEBER
75.087

FIELDS, D.E.
82.007

FIESER, SHERRY
82.153

FIGURA, PAUL C.
81.099

FILLER, JOEL
75.088

FINDEIS, JOHN H.
79.129 77.096

FINKEL, LAWRENCE D.
83.133

FINLAYSON, A.A.
78.070

FISCHLER, MARTIN A.
83.078 83.019 78.061

FISHBINE, GLENN M.
79.073

FISHER, KENNETH PAUL, ED.
73.134 73.108 73.105 73.098 73.097 73.096
73.094 73.090 73.071 73.065 73.050 73.047
73.019 73.017 73.014 73.010 73.007 71.029

FISHER, TERRY
80.042 77.251

FITTIPALDI, JOHN
83.158

FITZPATRICK, KATHERINE A.
77.170 76.006

FLEMING, E.A.
82.319 78.148

FLEMING, J.
83.060

FLEMING, M.S.
73.057

FLEMMING, L.N.
72.043

FLEMMING, NEIL L.
75.089 71.030

FLINLEIB, M.
79.072

FLORIDA STATE DEPARTMENT OF HEALTH AND REHABILITATIVE SERVICES. SYSTEMATIC NEEDS ASSESSMENT PROJECT, TALLAHASSEE, FL.
76.068

AUTHOR INDEX

FLOUZAT, G.
76.069

FLURY, BENEDETTO
82.240

FOCHI, WILLIAM L.
71.018

FOERSVARETS FORSKNINGSANSTALT
83.017 82.110 82.015 81.086

FOGG, PETER J., ED.
74.007

FOLCHI, W. F.
81.200

FOLEY, J.
82.283

FOLEY, MAURICE E.
75.090

FOOTE, H.P.
83.067 82.258 82.257 82.221 81.172

FORD, G.E.
83.008

FORESTI, C.
82.059

FORNARO, R.J.
78.045

FORNATARO, J.A.
73.058

FORSYTH COUNTY, WINSTON-SALEM, N.C.
75.091

FOSBURG, STEVE
72.009

FOSCHI, P.G.
82.224

FOSTER, H.D.
79.074

FOSTER, ROBERT W.
76.070

FOWLER, R.H.
83.072

FOWLER, ROBERT J.
79.075

FOX, A.C.L.
75.163

FOX, JOHN
77.097

FRANCIS, A.
81.057

FRANKLAND, PHILLIP
80.022 77.098

FRANKLIN, DENNIS P.
82.130 82.063 82.056

FRANKLIN, JANET
83.053

FRANKLIN, WILLIAM RANDOLPH
79.076 78.062

FRASER, SIMON E.G.
83.198

FRAUENKNECHT, P.J.
82.093

FRAYER, W.E., ED.
79.198 79.168 79.138 79.128 79.120 79.104
79.100 79.090 79.086 79.045

FRAZIER, BRUCE E.
77.099 75.092

FREDERICK, CHARLES J.
78.146

FREEMAN, HERBERT
82.093 78.064 78.063 77.100 76.071

FRENCH NATIONAL GEOLOGICAL SURVEY AND BUREAU OF MINES. DIGITAL CARTOGRAPHY SECTION.
78.157

FRENKEL, Y.
77.104

FRESNO COUNTY PLANNING DEPARTMENT, FRESNO, CA.
75.153

FREW, J.E.
78.142

FRIDELL, MARK
80.051

FRIED, ERIC
77.159

FRIEDELL, MARK
79.099

FRIEDMAN, S.Z.
79.134 77.008

FRIEND, ANTHONY
79.077 78.065

FRIES, ROBERT
83.025

FRITZ, CURTIS L.
80.043

FRONCZEK, C.J.
82.033

FRY, J.P.L.
82.256

FRYSZTACKI, WES
79.113

FU, K.
72.091

FUCHS, H
81.059

FULP, ROBERT R.
76.072

FULTON, PATRICIA
76.074 76.073

FULTON, W.C.
75.093

FURMAN, M.D.
80.041

FURUYA, H.
73.059

GAAL, G.
77.101

GAIDASZ, G.
74.113

GAITS, G.M.
75.094

GALLAURESI, DAVID R.
83.023

GAMBINO, LAWRENCE A.
74.057

GARBER, JOHN M.
82.222

GARCIA, ING. JOSE ALBERTO GONZALEZ
74.058

GARDINIER-HILL, COL. R.C.
71.031

GARDNER, J.S.
78.010

GARGANTINE, I.
82.278 82.247 82.246

GARGANTINI, C.
82.105

GARNER, BARRY J.
82.161

GARRISON, W.L.
72.044

GARTH, S.L.
77.102

GARTNER LEE ASSOCIATES LTD.
80.044

GARTNER, JOHN F.
80.044

GATES, WILLIAM A.
77.162 77.036 77.035

GATES, WILLIAM E. AND ASSOCIATES, INC.
74.059

GATLIN, JAMES A.
81.123

GAUDET, ROGER
79.078

GAY, F.C.
81.087

GAYDOS, LEONARD
82.225 74.054

GEBERT, GORDON A.
82.294

GENERAL ACCOUNTING OFFICE
82.054

GENERAL ELECTRIC CO.
83.028 81.009

GENERAL SOFTWARE CORP.
82.120

GENNERT, MICHAEL A.
83.025

GEOINDUSTRIA PRAHA, CZECHOSLOVAKIA
75.118

GEOLOGICAL SURVEY
82.066

AUTHOR INDEX

GEOLOGICAL SURVEY OF CANADA, OTTAWA, ONT.
75.083

GEOLOGICAL SURVEY. GEOGRAPHIC APPLICATIONS PROGRAM, WASHINGTON, D.C.
72.085

GEOLOGICAL SURVEY, RESTON, VA.
76.008 76.007 76.006 76.005

GEOPROCESSING SCIENCES, CORINTH, VT.
79.044 77.060

GEORGIA INSTITUTE OF TECHNOLOGY, ENGINEERING EXPERIMENT STATION.
83.042

GEORGIA STATE UNIVERSITY. INFORMATION SYSTEMS DEPARTMENT
77.244

GERN, MICHAEL
79.110

GERRITSEN, J.G.
78.001 77.005

GERSMEHL, PHILIP J.
82.205

GESELLSCHAFT FUR MATH. UND DATENVERARBEITUNG, ST AUGUSTIN, GERMANY
78.176 78.093 77.209

GETZELS, J.
75.245

GEVIRTZ, JOEL L.
77.201 77.200

GEZANN, GARY A.
77.103

GIBBONS, JOHN E.
78.066

GIBBS & HILL, INC. NEW YORK, N.Y.
80.059

GIBSON, ANTHONY C.
79.206

GIBSON, CAPT. R.J.
75.013

GIBSON, J.R.
83.123

GIBSON, L.
82.249

GIBSON, LAURIE D.
81.089

GIDDINGS, L.E.
75.095

GIERMAN, D.M.
81.196 81.152 76.075 75.097 75.096

GIFFEN, N.B.
71.022

GILES, R.H.
81.048

GILGEN, HANS
82.240

GILL, D.
77.104

GILL, ELIZABETH M.
75.126

GILLILAND, J.
72.067 72.066 72.065

GILLIS, JAMES W.
82.013

GILMAN, C.R.
71.032

GIROUX, G.H.
75.163

GKY & ASSOCIATES, INC.
81.098

GLADWIN, T.W.
73.060

GLASSMAN, N.
72.045

GLICK, BARRY
83.202

GLIKSMAN, SHOLOM I.
81.142

GLYNN, J.E.
78.182

GOCHENOUR, DONALD L. JR.
78.067

GODBOUT, PIERRE
82.190 82.189

GODFREY, KNEEDLAND A., JR.
77.105

GODWIN, COLIN I.
78.013 72.012

GOEHRING, DARRYL
77.213

GOERKE, DANIEL J.
83.154

GOFF, F. GLENN
74.106

GOFF, T.E.
83.012

GOLD, C.M.
79.079 77.107 77.106

GOLDBERG, M.P.
83.120 82.127 79.080

GOLDSHLAK, LEON
73.016

GONZALES, JOSE A.
75.098

GONZALEZ-FLETCHER, A.
80.045

GOODALE, PETER
78.146

GOODCHILD, M.F.
83.196 82.270 77.109 77.108 75.074 74.047

GOODENOUGH, D.G.
83.130 80.048 79.195

GOODMAN, NATHAN
77.197

GOODYEAR AEROSPACE CORPORATION, AKRON, OH.
77.001

GORDON, C.E.
78.151

GORDON, T.M.
75.099

GOSCOMBE, P.W.
77.110

GOSSARD, TERRY W.
78.068

GOTTLIEB, STEVEN E.
73.065 73.061

GOTTSCHALK, HANS-JORG
79.131 76.143 76.060 75.100

GOUGH, ED C.
83.032

GOULD, P.
70.022

GOURINARD, YVES
73.113 72.005

GOVERNMENT STUDIES AND SYSTEMS, INC. PHILADELPHIA, PA.
78.069

GOYERT, J.C.
82.041

GRACE, BARBARA F.
76.178

GRACIE, GORDON
73.062

GRADIENT MODELING, INC. MISSOULA, MT.
79.173

GRADUATE SCHOOL OF INFORMATION ENGNG., TAMKANG UNIV.
81.063

GRAFF, THOMAS O.
72.112 71.077

GRANDCLAUDE, P.
76.076

GRANDFIELD, ANDREW W.
83.196

GRANT, K.
78.070

GRAPHIC SYSTEM DESIGN AND APPLICATIONS GROUP
72.046

GRAVES, CAROL G.
79.081

GRAY, CHARLES R.
79.023

GRAY, JUNE K.
77.111

GRAYMAN, WALTER M.
78.071 77.112

GREAT NORTHERN NEKOOSA, CORPORATIN, STAMFORD, CT.
75.072

GREAT NORTHERN PAPER, MILLINOCKET MN.
79.104

AUTHOR INDEX

GREATER VANCOUVER REGIONAL DISTRICT
79.143

GREEN, D.C.
72.054

GREEN, F.C.
83.020

GREEN, JERRY E.
82.292

GREENBERG, SAADIA
77.079

GREENLEE, DAVID D.
80.046

GREENUP, WILBUR, ED.
79.199 79.134 79.132 79.131 79.130 79.101
79.082 79.068 79.025 79.024 79.023 79.022
79.021 79.020 79.001

GREER, E.B.
74.142

GREGORY, A.
72.095

GREULICH, GUNTHER H.
80.047 79.083 77.113

GREVE, CLIFFORD W.
78.125

GRIESEL, MARTHA ANN
82.013

GRIFFITH, JOHN A.
75.101

GRIMES, MARV
79.101

GRINNELL, H.W., JR.
77.067

GRIST, M.W.
72.047

GROMAN, ROBERT CARL
82.139

GRONMEYER, LARRY K.
78.072

GROOT, RICHARD
76.077 75.102

GROPPER, JAMES
78.135 77.205 77.204 77.203

GROSKY, W.I.
83.099 82.248

GROSS, ARTHUR G.
78.073

GROSS, BETTY L.
77.132

GROSSO, PATRICK F.
81.041 81.021 76.034

GRSKOVICH, EDWARD N.
75.103

GRUEN, A.
82.261 82.171

GRUZA, G.V.
77.114

GRYGORENKO, WICKTOR
82.001

GSCHWIND, RANDOLF A.
82.301

GUANGNAN, NI
83.135

GUINDON, B.
80.048

GUINN, CHARLES
76.092 75.130 75.104

GUNN, K.L.
75.044

GUNTHER, ALDEN C.
76.001 75.106 75.105 74.060

GUNTHER, F.
83.080

GUPTILL, STEPHEN C.
82.214 82.095 80.049 79.084 77.169 77.007

GUR, YEHUDA
72.048

GUSTAFSON, GLEN C.
81.138 76.078

GUSTAFSON, GREGORY
82.166

GUSTAFSON, ROBERT H.
75.107 71.033

GUSTIN, RUSSELL T.
83.022

GUY, M.
72.091

HAACK, HARVEY
71.034

HAALAND, C.M.
75.108

HACKMAN, FRANK C.
71.035

HADDON, JACK A.
78.074

HADFIELD, COLIN D.
75.109 74.061 71.036

HADGSON, J.A.
70.033

HAEFNER, HAROLD
75.110

HAGE, G.L.
78.075

HAGEN, D.C.
81.065

HAGLE, PAUL
73.133

HAHNE, K.
75.111

HAILSTONE, E.
74.004

HAILSTONE, J.
74.004

HAITZMANN, H.
78.100

HALASI-KUN, GEORGE J.
75.112 74.136

HALFORD, JOSEPH D.
77.115

HALL, ROBERT H.
83.045

HALL, STEVEN M.
82.201

HALLAM, CHERYL A.
81.187 79.085 77.170 77.169 77.007

HALLEN, STEN-AKE
77.116

HALLUM, III, MAURICE M.
81.013

HAMILL, JOHN
78.135 77.205 77.204 77.203

HAMILTON, ANGUS C.
82.219 80.050 78.076 76.079

HAMILTON, STEPHEN S.
71.037

HAMMER, LARRY N.
79.086

HAMPEL, V.E.
83.069

HANCOCK, W.R.
74.113

HANDLER, WILLIAM E.
77.117

HANIGAN, DR. FRANCIS L.
83.169 83.153

HANKE, PETER
76.018

HANNAH, JOHN W.
73.063

HANNAH, MARSHA JO
79.087

HANSA LUFTBILD, MIINSTER, FRG.
75.138

HANSEN, E.J.
81.054

HANSEN, HANS
73.064 71.038

HANSON, ANDREW J.
83.078

HANSON, MARK G.
81.148 79.088 78.077

HANSON, P.O.
77.030 77.028

HANSSEN. ERIC S.
73.065

HANSSEN, ERIC S.
73.061

HARALICK, ROBERT M.
78.138

HARBAUGH, JOHN W.
79.089

HARDING, ROGER A.
73.066

HARLAN, J.C.
81.105

HARLOW, C.A.
83.052

HARMESON, LEIGH
83.180

HARONG, DONALD
75.265

HARPER, JANET
82.226

HARPER, PEGGY
82.012

HARPER, R.H.
77.118

HARRIS CORPORATION. ELECTRO-OPTICS OPERATION, MELBOURNE, EL.
76.080

HARRIS, J.F.
77.070

HARRIS, L.J. BRIG.
73.068 73.067 71.039

HARRISON, DERRICK G.
77.005 75.113

HARRISON, TERRY P.
79.090

HARRON, B.
83.134

HARRON, WILLIAM J.
79.091

HART, PETER E.
77.080

HARVARD UNIVERSITY. DEPARTMENT OF LANDSCAPE ARCHITECTURE, CAMBRIDGE, MA.
72.087

HARVARD UNIVERSITY. LABORATORY FOR COMPUTER GRAPHICS AND SPATIAL ANALYSIS
81.192 79.221 79.220 79.218 79.217 79.216
79.214 79.213 79.209 79.208 79.205 79.200
79.197 79.194 79.190 79.188 79.187 79.181
79.160 79.159 79.151 79.150 79.149 79.146
79.145 79.143 79.141 79.140 79.137 79.136
79.126 79.125 79.121 79.118 79.113 79.112
79.110 79.105 79.103 79.102 79.098 79.096
79.095 79.094 79.093 79.092 79.088 79.084
79.080 79.079 79.076 79.073 79.067 79.066
79.065 79.060 79.059 79.054 79.052 79.051
79.049 79.048 79.040 79.028 79.026 79.019
79.018 79.017 79.016 79.012 79.011 79.009
79.004 78.156 78.077 78.052 74.062 73.139
73.117

HARVARD UNIVERSITY. LANDSCAPE ARCHITECTURE RESEARCH OFFICE
78.146 73.069

HARVARD UNIVERSITY, CAMBRIDGE, MA.
79.214 79.213 79.190 79.188 79.159 79.151
79.150 79.088 79.080 79.076 79.067 79.066
79.059 78.062 76.125

HARVEY O. BANKS, INCORPORATED, BELMONT, CA.
73.104

HASAN, SYED E.
82.084

HASELL, P.
72.093

HASKELL, K.H.
83.071

HAUGER, TOM
77.120

HAWK, JAMES R.
81.039

HAWS, RICHARD C.
78.078

HAYDEN, B.P.
75.005

HAYDU, GEORGE
78.079

HAYES, EDGAR E.
83.150

HAYNES, D.L.
75.093

HAZELTINE CORPORATION
79.160

HAZONY, YEHONATHAN
79.098 79.097

HDR SYSTEMS INC., OMAHA, NB.
80.062 78.095

HEALEY, THOMAS J.
76.034

HEARD, HARRY
79.021

HEATH, M.T.
75.108

HECKBERT, P.
82.087

HEGYI, FRANK
83.178

HEIL, RICHARD J.
78.080

HENDERSON, JOSEPH
76.081

HENN, J.W.
82.098

HENRY, BRADFORD B.
81.135

HENSSEN, IR. J.L.G.
82.208 75.114 74.063

HERNER, S., ED.
72.049

HEROT, CHRISTOPHER F.
80.051 79.099

HERRING, B.E.
74.045

HERSHEY, ALLEN V.
76.091

HERTFORDSHIRE COUNTY PLANNING DEPARTMENT, ENGLAND
73.060

HERTLING, HANS
77.119

HERZOG, ADRIAN
83.223

HESELTON, III, LESLIE R.
81.088

HESSDORFER, R.
75.115

HICKOK, KENNETH H.
79.100

HICKS, JIMMY E.
77.120

HIDLEBAUGH, ALLEN R.
82.096 81.052

HIEBERT, ALLAN
82.293

HIGGINS, M.
82.099

HIGHER EDUCATION CENTER FOR URBAN STUDIES, BRIDGEPORT, CT.
76.144

HILL-ROWLEY, R.
77.219

HILL, E.R.
77.075 73.070

HILL, J.M.
83.052

HILL, MILES
74.064

HILLIARD, JAMES A.
77.121

HINSHAW, ANDREW J.
73.071

HIRSCH, ERNEST
75.212 74.064

HIRSCH, R.
72.062

HIRSCH, STEPHEN
83.202

HITE, JAMES, C.
72.050

HOEH, ROGER S.
73.072

HOERAUF, EUGENE A.
80.100

HOFFER, R.M.
81.073

HOFFMAN (MORTON) AND CO. INC., BALTIMORE, MD.
74.065

HOFFMAN, MORTON
74.065

HOGAN, RON
83.034

HOINKES, CHRISTIAN
79.024 76.143 74.066

HOLBAEK-HANSSEN, E.
83.191

HOLBROOK, D.R.
76.082

HOLDGATE, MARTIN W.
82.244

HOLEKAMP, RICHARD A.
76.083

HOLLAND, EDITH E.
76.084

HOLLAND, MICHAEL
79.048 79.047

HOLLANDER, ELIZABETH
75.245 75.104

HOLLOWAY, DONALD P.
83.149 80.052

HOLLOWAY, RICK
79.194

HOLM, NILS
74.067

HOLMES, GARRY L.
82.056

HOLMES, HARVARD H.
79.101 75.116 74.068

HOLMES, R.F.
84.001

HOLTQUIST, NANCY B.
82.137

HONABLEW, JOSEPH A.
82.174

HONEA, B.
78.081

HONEA, ROBERT B.
79.102

HONG
82.255

HOOPER, N.J.
79.192

HOOTNICK, K.
81.069

HOPKINS, LEWIS D.
77.122

HOPP, R.
74.022

HORAK, THOMAS E.
74.069

HORDON, ROBERT M.
75.117

HORNBEAK, CARL (LT.)
79.103

HORSLEY, J.
81.070

HORTON, FRANK E.
72.095 72.092 72.051 72.040 72.038 71.025
71.024

HORWOOD, E.M.
73.073 70.023

HORWOOD, ROSEMARY
77.123

HOSKINS, W.D.
83.136

HOSTROP, BERNARD W.
80.054 80.053

HOUSE, LOUIS O.
79.104 75.072

HOVEY, STANFORD T.
74.021

HOWARTH, PHILIP J.
83.121

HOWE, ROBERT T.
70.025 70.024

HOWELL, JAMES A.
80.055

HOWMAN, C.
78.082

HRUSKA, J.
75.118

HSU, MEI-LING
75.119 71.040

HSU, SHIN-YI
82.175 78.084 78.083 77.124

HUANG, XINGYUAN
82.175

HUBAUN, A.
72.052

HUBBARD, CARLETON L., JR.
71.078

HUBER, WILLIAM A.
82.140 82.042 82.023

HUBERT, PIERRE J.
80.056

HUFF, A.
72.100

HUFNAGEL, FRED
79.068

HUGG, LAWRENCE
75.120

HUGHES, ALAN
79.105 73.074

HUMA, I.
78.085

HUMMON, NORMAN
72.044

HUMPHRIES, BRIAN
74.070

HUNING, J.R.
82.112

HUNKA, GEORGE W.
79.106 78.086

HUNLEY, WALTER E.
77.185

HUNT, ANNE M.
79.107

HUNT, B.R.
81.043

HUNT, DONALD H.
75.121

HUNTER, DARYL
79.129

HUTCHESON, F.T.
75.122

HUTCHISON, W.W.
77.125 76.085 75.268 75.257 75.240 75.231
75.222 75.202 75.190 75.189 75.137 75.126
75.123 75.118 75.099 75.034 75.029

HUTT, R.B.
70.026

HUXHOLD, WILLIAM E.
82.301 78.087 77.126

HYDE, RICHARD F.
78.088

HYDROLOGIC ENGINEERING CENTER
77.127

HYSOM, JOHN L. JR.
74.071 72.054 72.053

IBM CANADA LIMITED, HALIFAX, N.S.
72.059 70.030

IBM FEDERAL SYSTEMS DIVISION, GATHERSBURG, MD.
78.014 75.032

IBM SCI. CENT., HEIDELBERG, GERMANY
77.164

IBM SCI. CENT., PALO ALTO, CA.
78.159

IDAHO WATER AND ENERGY RESOURCES RESEARCH INST.
82.137

IEEE
78.176

IGU COMMISSION ON GEOGRAPHICAL DATA SENSING AND PROCESSING, OTTAWA, ONT.
76.156

ILER, WILLIAM.
80.057

ILG, MARKUS
82.241 82.240

ILLINOIS COASTED ZONE MANAGEMENT PROGRAM
77.069

IMAGE GRAPHICS, INC.
81.041 81.021

IMHOFF, M.L.
83.080

IMPERIAL OIL LIMITED
75.229

INFANGER, CRAIG L., ED.
78.136

INFORMATION, INCORPORATED, ROME, N.Y.
72.015

INGELS, FRANKLIN M.
73.075

INGENIERO GUZMAN, PABLO ARNOLDO, NATIONAL GEOGRAPHIC INSTITUTE, EL SALVADOR
74.058

AUTHOR INDEX

INGRAFFEA, ANTHONY R.
83.208 82.085

INGRAM, JEFF R.
81.018

INST. GEOGRAPHIQUE NAT.
81.062

INSTITUT FUR ANGEWANDTE GEODASIE, FRANKFURT AM MAIN GERMANY
79.210 75.187

INSTITUT GEOGRAPHIQUE NATIONAL. SERVICE DE LA CARTOGRAPHIE A GRANDE ECHELLE, PARIS, FRANCE
80.030

INSTITUTE OF GEODETSKI ZAVOD SRS, LJUBLJANA, YUGOSLAVIA
78.009

INSTITUTE OF TECHNOLOGY. LAND CONSOLIDATION AND PLANNING DEPARTMENT, STOCKHOLM, SWEDEN
75.141

INSTITUTE OF TERRESTRIAL ECOLOGY. UNITED KINGDOM
75.043

INSTITUTO DE PESQUISAS ESPACIAIS, SAO JOSE DOS CAMPOS (BRAZIL)
82.059 81.032

INSTITUTO GEOGRAFICO AGUSTIN CODAZZI, BOGOTA, COLUMBIA
80.045

INT. COMPUT. LTD., LONDON ENGLAND
76.038

INTER-AGENCY PLANNING BRANCH, MUNICIPAL AFFAIRS
82.149

INTERACTIVE SYSTEMS CORP.
81.089

INTERGRAPH, INC.
81.171

INTERMINISTERIAL COMMITTEE ON GEOGRAPHICAL REFERENCING
81.116

INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE
75.124

INTERNATIONAL CARTOGRAPHIC ASSOCIATION. COMMISSION 3. AUTOMATION IN CARTOGRAPHY
76.058

INTERNATIONAL CITY MANAGEMENT ASSOCIATION
77.245 77.244 77.235 77.201 77.183 77.180 77.161 77.143 77.123 77.118 77.103 77.079 77.078 72.055

INTERNATIONAL CITY MANAGEMENT ASSOCIATION. MANAGEMENT DEVELOPMENT CENTER
77.067 77.056 77.013

INTERNATIONAL GEOGRAPHICAL UNION. COMMISSION ON GEOGRAPHICAL DATA SENSING AND PROCESSING
77.223 77.038 76.088 76.087 76.086

INTERNATIONAL GEOGRAPHICAL UNION. COMMISSION ON GEOGRAPHICAL DATA SENSING AND PROCESSING, SOFTWARE INVENTORY WORKING GROUP
75.125

INTERNATIONAL GEOGRAPHICAL UNION. NATIONAL SCIENCE FOUNDATION, AUSTRALIA DEPARTMENT OF SCIENCE AND TECHNOLOGY
82.317

INTERNATIONAL GEOPHYSICAL UNION. COMMISSION ON GEOGRAPHICAL DATA SENSING AND PROCESSING
79.108

INTERNATIONAL INSTITUTE FOR SERIAL SURVEY AND EARTH SCIENCES, ENSCHEDE, NETHERLANDS
75.010

INTERNATIONAL OFFICE OF CADASTRE AND LAND RECORDS APELDOORN, WALTERSINGEL 1, HOLLAND
75.114

INTERNATIONAL OFFICE OF CADASTRE AND LAND RECORDS. THE HAGUE, HOLLAND
74.063

ION, ROBERT J.
72.056 71.042 71.041 70.027

IRISH, SUMNER B.
78.089 77.129 77.128

IRVINE, J.A.
78.090

ISBELL, DOUGLAS M.
78.186

ISRAEL GEOLOGICAL SURVEY. GEOLOGICAL DATA PROCESSING UNIT, JERUSALEM, ISRAEL
77.104

AUTHOR INDEX

ITEK CORP., OPTICAL SYSTEMS DIV.
81.044

IVERSON, WAYNE D.
75.243

IVES, LAURA
80.058 78.091

JAAKKOLA, SIPI
83.051

JACOBER, ROBERT P. JR.
82.034 79.109

JAGOE, ELLIS H.M.
77.130

JAIN, R.
83.099 82.248

JAKSIC, Z.
83.170

JALBERT, J.S.
77.131 76.089

JAMBERDINO, A.
79.021

JAMESON, DONALD A.
77.132

JANCAITIS, J.R.
73.076

JANDA, RICHARD J.
82.072

JANKINS, J.L.
73.076

JAQUES, DENNIS R.
82.158

JARAMILLO, PLACIDO E.
77.133

JARO, MATTHEW A.
76.090 72.057

JAROSZ, CHRISTOPHER J.
82.107

JARVIS, R.
77.030

JAWORSKI, EUGENE
82.176

JAY, JOSEPH G.
81.141

JEFFREY, KEITH G.
75.126

JENSEN, JOHN E.
73.077

JENSEN, THOMAS W.
81.055

JERUSALEM SYST., DANBURY, CT
79.163

JET PROPULSION LABORATORY, PASADENA, CA.
83.041 82.112 80.096 79.028 78.106

JEYAPALAN, K.
79.111

JOELSON, MITCHELL R.
79.073

JOHANNSEN, CHRISTOPHER J. (ED.)
82.280

JOHN, R. B.
82.321

JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.
75.080

JOHNS, JAMES
78.128

JOHNSON, B.V.
74.031

JOHNSON, C.
72.095

JOHNSON, CHRISTINE G.
75.243 75.127

JOHNSON, CLYDE G.
76.091

JOHNSON, MARK R.
77.134

JOHNSON, MYRLE M.
78.092

JOHNSON, P.E.
81.104

JOHNSON, PAUL
79.102 78.081

JOHNSON, R.D.
70.028

JOHNSON, RANDALL K.
81.147

JOHNSON, S.C.
82.104

JOHNSON, TIMOTHY R.
81.161

JOHNSON, WILLIAM
82.173

JOHNSTON, D.M.
82.227

JOHNSTON, DONALD R.
80.059 79.112

JOHNSTON, GERALD WALTER
82.135 82.036

JOHNSTON, LEE P.
79.113

JOHNSTON, WILLIAM D.
79.115 79.114

JOLLY, REBECCA L.
82.177

JONES, BRYAN
77.079

JONES, HAROLD E.
81.131

JONES, R.L.
71.043

JORDAN, L.
80.041

JORDAN, N.F.
78.047

JUHASZ, THOMAS C.
82.167 81.155

JUNGERT, E.
82.110

JUNKIN, B.G.
82.077

JURKAT, MAYME
77.135

KADANOFF, LEO P.
70.029

KADMON, NAFTALI
82.234

KAK, A. C.
82.269

KANAL, LAVEEN N.
81.034

KANANASKIS CENTER FOR ENVIRONMENTAL RESEARCH
82.158

KANSAS CITY DEPARTMENT OF INFORMATION AND RESEARCH, KANSAS CITY, KS.
78.127

KANSAS CITY POLICE DEPARTMENT
79.103

KANSAS GEOLOGICAL SURVEY, LAWRENCE, K.S.
75.208 75.066

KANSAS STATE UNIVERSITY. DEPARTMENT OF COMPUTER SCIENCE
78.138

KANSAS UNIVERSITY CENTRE FOR RESEARCH, INC. TECHNOLOGY APPLICATIONS LABORATORY, LAWRENCE
74.078

KANSY, KLAUS
78.093

KANTAUSKIS, JOSEPH
76.112

KARAM, G.
83.120

KAROW, K.
83.009

KASAHARA, YUKATA
81.067 80.103

KATES, PEAT, MARWICK AND COMPANY
71.044

KAVALIUNAS, JOHN, ED.
76.126 75.279 75.264 75.263 75.256 75.236
75.214 75.213 75.198 75.185 75.174 75.167
75.164 75.161 75.156 75.150 75.134 75.128
75.127 75.121 75.120 75.112 75.087 75.085
75.081 75.071 75.066 75.064 75.063 75.047
75.040 75.039 75.036 75.027 75.026 75.025
75.018 75.017 75.011 75.009

KAWATSKI, LOIS A.
77.232

KAWIN, R.A.
83.069

KAYS, O.
73.028

KAZMIERCZAK, H.
83.013

KEEFER, E.K.
73.028

KEEFER, RANDALL L.
77.208

KEFFER, T.
83.036

KEIR, A.
72.018

KEISTER, THOMAS D., ED.
74.007

KELLERMAN, AHARON
81.143 80.060

KELLEY, JOHN W.
74.101

KELLIE, ANDREW C.
79.116

KELLOGG, J.S.
75.129

KELSEY, C.T.
77.136

KELSEY, D.
77.136

KENNEDY, E.A.
83.162 82.203 81.177

KENNEDY, MICHAEL
77.137 76.092 75.131 75.130 75.104

KENTUCKY. DEPARTMENT OF REVENUE, FRANKFORT
77.195 77.138

KERN AND CO. LTD, 5001 AARAU, SWITZERLAND
78.096

KERR, JOHN H.
80.061 78.094

KESIK, A.B.
83.122 82.215 72.093

KESSELL, STEPHEN R.
79.173

KESSLER, ALLAN R.
73.081 73.080 73.079

KEVANY, MICHAEL J.
83.184 78.037 77.139 75.132 71.038

KEWER, P.M.
77.095

KHAKHAR, DIPAK
77.141 77.140

KHATKY, V.
78.098

KHORRAM, SIAMAK
82.008 79.117

KIDWELL, RICHARD
79.023

KIEFER, RALPH W.
73.078 72.058

KIHL, T.H.
75.133

KILBY, W.E.
79.079

KILGOUR, A.C.
82.004

KILLPACK, CHARLES L.
78.088

KINDLEBERGER, CHARLES P.
83.151

KINGSTON, PETER
72.086 72.081 72.059 70.030

KINNEAR, CHRISTINE
83.107

KINZY, STEPHEN W.
80.062 78.095 77.143 77.142 75.134

KIRBY, C.L.
82.279 82.213

KIRBY, MALCOLM
74.064

KIRCHOFF, D. MICHAEL
77.173

KIRIAKAKIS, ZISSIS
83.221 83.119

KIRKWOOD, V. ET AL.
83.097 83.096

AUTHOR INDEX

KJOLBERG, T.
81.026

KLAUS, BARWINSKI
75.135

KLAVER, JACOB
78.096

KLEUSS, PLUMA W.
78.097

KLINGEBIEL, A.A.
74.072

KLINGENBERG, F.
80.063

KLINGER, A.
81.174 79.002

KLOOSTERMAN, BRUCE
77.145 77.144 75.077

KLOOSTERORAN, B.
75.038

KLOPATEK, J.M.
79.162

KNAPP, ELLEN M.
79.118

KNIGHT, GENE D.
75.136

KNITTER, H. ROBERT
71.012

KOCH, PAUL D.
78.071

KOHLER, JAMES
77.165

KOK, R.
79.154

KOLASSA, DAVID A.
83.023 82.297 82.038

KOLLER, DR. GLENN R.
80.064

KOLLIAS, J.G.
83.064

KOLLIAS, V.J.
83.064

KOMB. GEOD. UND KARTOGR, LEIPZIG, EAST GERMANY
76.018

KONECNY, GOTTFRIED
71.045

KOOP, S.F.
72.054

KOPPERS CO. INC., NORRIS, TN.
79.090

KORPORAL, KENNETH D.
83.131

KOSCO, WILLIAM J.
76.103

KOTTMAN, CLIFFORD A.
81.038

KOZAR, K.
75.119

KRAEMER, KENNETH L., ED.
75.151

KRAFT, ROBERT N.
81.022

KRAMLICH, DAVID
80.051 79.099

KRANG, S.G.
75.014

KRAPP, WILLIAM B.
79.119

KRASNAKEVICH, JOHN R.
73.082

KRATHY, V.
78.099 72.094

KRAUS, K.
78.100

KREBS, P.V.
82.178

KREIFELTS, THOMAS
79.020

KREMER, M.
75.137

KREUTZER, ALBERT
72.015

KROLL, F.S.
75.138

KROLL, PETER
83.144

AUTHOR INDEX

KROPATSH, W.
78.101

KUHLMANN, HERBERT W.
82.082

KULIKOV, I.B.
82.120

KURILOV, M.A.
82.088

KUSLER, JOHN A.
72.084

KUSLER, JOHN, ET AL.
75.139

L.N.K. CORPORATION, SILVER SPRING, MD.
81.034 78.147

LA GARDE, V.
74.083 72.086 72.059

LABAU, VERNON J.
79.120 78.107

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
76.093

LACENERE, ANTHONY M.
76.141

LAFEBVRE, J.J., ET AL.
72.060

LAFLEUR, THOMAS G.
72.061

LAFOLLETTE, WILLIAM H.
83.050

LAGARDE, VICTOR E.
74.009 72.087

LAM, NINA
83.026 82.035

LAMBIRD, BARBARA A.
81.034

LAMONT, R. N.
82.310

LAMPI, ALLAN O.
75.140

LANCASTER, CHARLES
79.218

LAND REGISTRATION AND INFORMATION SERVICE, FREDERICTON
79.178

LAND TITLES OFFICE
75.201

LAND-RELATED INFORMATION SYSTEMS
74.121 74.120 74.119

LAND-RELATED INFORMATION SYSTEMS. TASK FORCE ON URBANIZATION AND THE FUTURE
75.237

LANDGREBE, D.
72.091

LANDINI, ALBERT J.
76.031 75.179 75.178 74.073

LANE COUNTY, OR.
79.169 74.074

LANE, JEFFREY M.
83.216

LANGFORD, GLEN J.
80.072 80.065 76.094

LANGLEY, P.G.
72.095 70.031

LANHAM, R.N.
73.058

LANN, N.A.
83.069

LARIMORE, PHILIP B.
79.121

LAROUCHE, ANDRE
83.137

LARSEN, BARBARA J.
80.084 78.102

LARSEN, HANS K.
76.105 76.104 76.095 71.046

LARSSON, GERHARD
75.141

LAS CRUCES, N.M.
79.115 79.114

LASERSCAN LTD., CAMBRIDGE U.K.
75.230

LASKODI, T.
82.284

LATE, JOHN
72.015

LAUB, JOHN
73.101

AUTHOR INDEX

LAUB, LEONARD
79.021 79.020

LAUER, D.T.
83.043

LAVINE, DAVID
81.034

LAVKULICH, L.M.
79.185

LAWRENCE BERKELEY LABORATORY
79.221

LAWRENCE LIVERMORE NATIONAL LAB.
83.069 82.123

LAWS, KENNETH I.
83.044

LAWSON, THOMAS J.
81.024

LAY, JOHN C.
79.122 77.146

LE BLANC, AUBREY L.
76.091

LEACHTENAUER, J.
72.062

LEARY, FAIRFAX, JR.
73.086

LEBERL, FRANZ W.
82.083 82.065 81.139 78.101

LEBLANC, AUBREY L., ED.
73.126 73.124 73.085 73.084 73.083 73.068
73.067 73.059 73.057

LEE, DOUGLASS B., JR.
73.087

LEE, GEORGE Y.G.
77.086

LEE, GERHARD B.
77.099 75.092

LEE, MICHAEL P.
81.016

LEE, P.J.
81.158

LEE, Y.C.
83.173

LEFTOFF, L.
72.054

LEGENSKY, STEVEN
77.135

LEHAN, TIM J.
83.188 82.212 82.090

LEHMAN, D.H.
77.147

LEHNERT, WENDY G.
83.024

LEHTONEN, M.
77.101

LEITZ, JOHN C.
83.025

LEIVO, G.E.
76.100

LEMER, ANDREW C.
80.066 79.123

LENCI, M.
75.137

LENNON, JOHN F.
81.183

LENNON, T.
75.212

LENT, J.
72.095

LENZMEIER, CHARLES T.
81.089

LEONE, FRANK R.
75.142

LEONHART, L.S.
83.067 81.092

LERNER, HILARY
75.143

LESAGE, M.T.
75.137

LEUPIN, M. M.
82.262

LEVENSON, J.B.
83.070 83.014

LEVERENZ, JON M.
79.068

LEWANDOWSKI, G.M.
74.113

LEWELLEN, M.
76.100

LEWIS, HARRY R.
78.062

LEWIS, JOHN E.
75.004 73.004

LEWIS, JOSEPH
74.075

LEWIS, PHILLIP H., JR.
72.063

LI, F.K.
83.206

LI, M.
82.248

LI, SHIU-YEU.
83.102

LI, VICTOR ON-KWOK
81.106

LICHTNER, WERNER
79.124

LIETH, H.
71.047

LIGGETT, ROBIN S.
79.125

LIGHT, DONALD L.
71.048

LIHVAR, V.A.
77.220

LIKENS, W.C.
83.021 82.119 81.102

LILES, WILLIAM C.
81.137

LILLJEQUIST, R.
75.029

LIMA, ROBERT J.
78.103

LIN, S.Y.
81.063

LINDERS, JAMES G.
80.067 78.104 76.096 75.144

LINDGREN, DAVID T.
72.085

LINS, HARRY F., JR.
76.006

LIPSETT, F.R.
77.214 77.011

LITTLE, JAMES J.
79.075 76.116

LITTLEFIELD, R.J.
83.073

LLOYD, P.E.
79.016 77.148 77.025

LOCH, ROLAND
83.145

LOCKHEED ELECTRONICS COMPANY. DEPARTMENT OF LIFE SCIENCES APPLICATIONS, HOUSTON, TX.
75.095

LOCKHEED ENGINEERING AND MANAGEMENT SERVICES CO., INC.
83.037

LOCKHEED PALO ALTA RESEARCH LABORATORY, CA.
73.093

LODWICK, GRAHAM D.
82.217

LOEW, K.
83.063

LOGAN, RON
78.105

LOGAN, T.L.
82.112 78.106

LOHRENZ, J.
78.140 77.233

LOIKOW, JOHN D.
83.176

LOITSCH, J.
78.100

LOMBARDO, M.A.
82.059

LONG ISLAND UNIVERSITY. MUNICIPAL SYSTEMS RESEARCH PROJECT, N.Y.
73.131

LONGY, M.A.P.
77.149

LOON, JOSEPH C.
82.261 82.171 81.138

LORENZ, R.W.
83.063

LOS ALAMOS SCIENTIFIC LABORATORY, LOS ALAMOS NM
82.113 79.189 78.170 78.141 78.140 78.092
77.233

LOSCH, K.
77.001

LOUBAL, PETER
79.113

LOUISIANA STATE UNIVERSITY
79.121 75.265

LOVELAND, THOMAS R.
79.181 77.206

LOVINGOOD, PAUL E. JR.
75.145

LOWE, D.S.
79.126

LOWE, JACK
74.064

LOWER PIONEER VALLEY REGIONAL PLANNING COMMISSION
73.088

LOZAR, ROBERT C.
83.091

LUBKOWITZ, R.
83.013

LUCAS, D.
82.249

LUCAS, MICHEL
79.127

LUCAS, THERESE C.
74.102

LUCIA, D.
72.034

LUKES, GEORGE E.
81.035

LUND INSTITUTE OF TECHNOLOGY, SWEDEN
79.015

LUND UNIVERSITY, LUND, SWEDEN
79.110 77.141 77.140

LUND, H. GYDE
79.128 79.045 78.107

LUNDY ELECTRONICS AND SYSTEMS INCORPORATED. GLEN HEAD, N.Y.
77.117

LUSCOMBE, B. WAYNE
83.183

LUTH, H., ED.
74.022

LUTZEN, EDWIN E.
74.111

LYLE, JOHN
74.076

LYNCH, DENNIS
79.088 78.077

LYNCH, L.G.
77.151 77.150 77.089

M&S COMPUTING, INC., HUNTSVILLE, AL.
80.055

MACDONALD, CONNIE L.
83.164 82.211 81.152 80.068 80.042 78.108

MACDONALD, G.J.
75.146

MACDONALD, K.B.
83.181 80.069

MACDOUGALL, E.B.
81.050

MACINTOSH, CHARLES W.
79.129 76.097 75.204

MACK, A.R.
80.070

MACK, HAROLD L.
75.155

MACKENZIE, H.G.
77.152

MACLEOD, M.H.
71.049

MACNAUGHTON, NEIL
79.147

MACRAE, BARRY D.
82.176

MACRITCHIE, S.
80.071

MADILL, R.J.
82.179 80.071 77.153 75.147

MADZIYA, R.G.
81.144

MAGAR, K.M.
73.127

MAGEDSON, ROBERT
83.216

MAGGS, PETER B.
73.090 73.089

MAGNENAT-THALMANN, NADIA
83.137

MAGRAW, DANIEL B.
72.064

MAHAN, R.
77.003

MAHAN, SHEILA
78.109

MAHER, ROBERT V.
83.129 80.072

MAHONEY, R.
77.003

MAI, KENNETH D.
75.071

MAINCENT, G.
81.181

MAKAROVIC, B.
82.228

MAKI, LES
72.074

MALCOLM, C.
82.094

MALES, RICHARD M.
80.073 80.024 77.154

MALILA, W.A.
83.015

MALMO MUNICIPALITY, MALMO, SWEDEN
77.048

MALMQVIST, LENNART
79.015

MANAKO, V.V.
82.088

MANGUM, S.E. JR.
80.097

MANITOBA. DEPARTMENT OF RENEWABLE RESOURCES AND TRANSPORTATION SERVICES
78.160

MANITOBA. RESOURCES DATA TASK FORCE
77.155

MANNING, JOSEPH M.
75.065

MANZIONI, GIORGIO
82.302

MARBLE, DUANE F.
82.242 82.154 79.134 79.133 79.132 79.131
79.130 77.156 77.030 76.157 76.155 76.154
76.001 72.067 72.066 72.065

MARCUS, A.
81.087

MARGERISON, T.A.
77.157 76.098

MARINELLA, RONALD C.
83.151

MARITIME COMPUTERS LIMITED
77.190 77.189

MARK, DAVID M.
83.111 79.135 78.110 75.148 73.107

MARKS, D.G.
78.142

MARKS, G. WARREN, ED.
80.074

MARLENKO, N.
82.105

MARLEY, MICHAEL
77.158

MARSH, PAUL E.
79.136

MARSHALL, G.
78.001

MARSHALL, I.B.
82.316

MARSHALL, RODNEY S.
79.187

MARSTON, L.
75.149

MARTELL, ALBERTO TORFER
75.150

MARTIN, J.J.
82.250

MARTIN, JOHN D.
77.023

MARYLAND UNIVERSITY COLLEGE PARK COMPUTER SCIENCE CENTER
79.167

MARYLAND UNIVERSITY, COMPUTER VISION LAB.
83.007 82.019

MARYLAND. DEPARTMENT OF STATE PLANNING
79.005 79.004

MASHBURN, R.G.
76.099

MASON, C.M.
77.148

MASRY, SALEM E.
82.315 82.078 82.076 79.137 78.111 78.059 77.163 75.084

MASSACHUSETTS EXECUTIVE OFFICE OF EDUCATIONAL AFFAIRS
79.136

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. URBAN SYSTEMS LABORATORY, CAMBRIDGE
74.133 74.132 74.131

MASSACHUSETTS LAND RECORDS COMMISSION, BOSTON
76.012 75.020

MAST, R.F.
70.046

MATSUOKA, RYUJI
78.122

MATSYAMA, T.
82.251

MATTHEWS, ELAINE
83.055

MATTHEWS, JOSEPH R., ED.
75.151

MATTHEWS, MICHAEL J.
77.159

MATTHIES, L.
82.284

MAUCHLY - WOOD SYSTEMS CORPORATION
77.160

MAUSEL, P.
76.100

MAW, K.
82.119 82.053

MAXSON, GAYBRIELLE E.
77.161

MAY, LEROY M.
75.152

MAYHOOD, F.
78.112 78.001

MAYO, K.K.
77.058

MCADAMS, M. PATRICK
80.087

MCALLISTER, D.F.
78.045

MCAULIFFE, WILLIAM J. JR.
71.051 71.050

MCCANTA, KERRY L.
75.153

MCCARTHY, J.L.
81.087

MCCARTHY, MICHAEL M.
79.158

MCCLUNG, IAN
78.113

MCCLURE, JOE P.
79.138

MCCOLL, W.D.
83.123

MCCORMICK, D.D.
83.001

MCCOWN, BRENT H.
77.162 77.036 77.035

MCCULLAGH, MICHAEL J., ED.
76.101 76.023 75.278 75.277 75.266 75.241 75.233 75.226 75.225 75.209 75.208 75.186 75.183 75.175 75.119 75.094 75.067 75.062

MCCULLOCH, CHARLES M.
76.102

MCDANIEL, R.
70.032

MCDONOUGH, JAMES O.
76.022

MCENTYRE, JOHN G.
79.139

MCEWEN, ROBERT B.
83.211 83.168 82.266 79.140 79.131 76.103

MCGAVRAN, L.P.
82.113

MCGILL UNIVERSITY, MONTREAL, QUE.
79.154

MCGILL, ROBERT
79.141

MCGILL, W.B.
83.219

MCGINNIS, DAVID F.
81.123

MCGINTY, HERBERT K. III
76.008 76.006

MCGRATH, ROBERT
79.023

MCGREGOR, B.
83.203

MCGROGAN, S.K.
83.069

MCINTOSH, WILLARD L.
76.073

MCKAY, L.
83.220

MCKAY, M.C.
70.033

MCKEOWN, JR., DAVID M.
83.085 82.020

MCKIBBON, GEORGE
81.119

MCLAREN, R.A.
78.111 77.163

MCLAUGHLIN, CARROLL W.
79.104

MCLAUGHLIN, JOHN
83.230 83.229 83.228 82.315 82.314 82.078
82.076 81.202 80.076 80.075 76.105 76.104
75.051 73.091

MCLELLAND, WILLIAM G.
74.077

MCMAHAN, M.K.
74.008

MCMASTER, G.E.
83.136

MCMASTER, ROBERT
83.110

MCMURTRY, GEORGE J.
73.092

MCNABB, GRANT H.
82.300 82.194

MCQUILLAN, A.K.
79.195 79.142

MCRAE, STEPHEN D.
80.094

MCTEER, WILLIAM D.
73.008

MEAD, ROY A.
82.039

MEADE, COLLEEN
79.143

MEADOWS, JOHN, ED.
75.255 75.212 75.171 75.154 75.140 75.072

MEAGHER, D.
82.252

MEDER, H.G.
77.164

MEDIONI, GERARD G.
82.021

MEDLIN, A.L.
76.035 76.033

MEEHAN, GRADY B.
80.077

MEHTA, H.S.
82.229

MEIER, ANDREAS
82.241

MEISNER, R.M.K.
83.162 82.264

MEISZER, NICHOLAS M.
79.144

MEIXLER, DAVID
83.107

MELANDER, CHRISTINA
71.052

MELLER, SVEN G.
72.071

MELLO, LUIZ S.H.
83.200

MELLOR, J.C.
82.230

MENELY, G. JOSEPH
77.165

MERCHANT, J.W.
74.078

MERRIAM, D.F.
74.079

MERRILL, D.W.
82.111 81.087

MERRILL, R.D.
73.093

MERRITT, E.S.
76.118

MERRY, C.J., ET AL
83.215

MERSCH, JEROME B.
79.145

MESSMORE, JEFFREY A.
82.064

METRO DATA PROCESSING DEPARTMENT, NASHVILLE, TENNESSEE
75.088

METROLITAN TRANSPORTATION COMMISSION, BERKELEY, CA.
77.085

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS, D.C.
70.034

METTAUER, JACK C.
81.078 81.008

METZLER, M.D.
83.015

MEUSBURGER, PETER
79.146

MEXICO CITY. CADASTRE AND PROPERTY TAX OFFICE
79.058

MEYER, CARL F.
75.155

MEYER, MORTON A.
75.156 74.080 72.068

MEYER, R.F.
77.166 75.157

MEYERS, C.
75.149

MEYERS, CHARLES R., JR.
77.137 76.106 76.029 75.131 72.069

MEZERA, DAVID F.
81.150

MICHIGAN STATE UNIVERSITY
82.050 75.120 75.093

MICHIGAN STATE UNIVERSITY. COMP. INST. SOCIAL SCI. RES. EAST LANSING, MI.
76.175

MICHIGAN STATE UNIVERSITY. DEPARTMENT OF RESOURCE DEVELOPMENT
80.094

MICHIGAN STATE UNIVERSITY, REMOTE SENSING PROJECT. EAST LANSING, MI.
77.219

MICHIGAN STATE UNIVERSITY, STATE COLLEGE
79.148

MICKLE, M.H.
77.167

MID WILLAMETTE VALLEY CONCIL OF GOVERNMENTS, SALEM, OR.
71.053

MID-OHIO REGIONAL PLANNING COMMISSION, COLUMBUS OH.
77.032

MIDDLEBURY COLLEGE. DEPARTMENT OF GEOGRAPHY
80.022

MIDDLETON, ELIZABETH M.
82.222

MIKES, THOMAS C.
75.158

MILASK, LAURANCE J.
79.081

MILAZZO, V.A.
81.184

MILES, THOMAS C.
74.081

MILLER, BOB
79.147

MILLER, J.
83.061

MILLER, LEE D.
74.123 74.036

MILLER, ROBERT J.
78.114

MILLER, ROBERT L.
77.159

MILLER, STEPHAN W.
82.180

MILLER, STEPHEN A.
79.005

MILLER, W. FRANK
79.148

MILLER, W.R.
75.159

MILLER, WILLIAM J.
81.047

MILLET, MICHAEL J.
72.070

MILLIGAN, JOHN
75.074 74.082 74.047

MILLS, ROBERT F.
80.078 79.149

MILNE, W.J.
81.051

MILTON, J.M.
83.140

MILTON, L.E.
83.140

MINERAL DEPOSITS WORKING COMMITTEE. NATIONAL ADVISORY COMMITTEE ON RESEARCH IN THE GEOLOGICAL SCIENCES
78.115

MINES ADMINISTRATION LIMITED, BRISBANE, AUSTRALIA
77.110

MINGS, S. DANIEL
83.146

MINISTRY OF CONSUMER AND COMMERCIAL RELATIONS, LAND REGISTRATION MANAGEMENT COMMITTEE
75.192

MINNESOTA CRIME CONTROL PLANNING BOARD
79.073

MINNESOTA STATE DEPARTMENT OF ADMINISTRATION. INFORMATION SYSTEMS DIVISION (MSDOA)
71.054

MINNESOTA STATE PLANNING AGENCY, ST. PAUL, MN.
78.134 73.120

MINNESOTA. DEPARTMENT OF NATURAL RESOURCES, ST. PAUL, MN.
77.031

MINTZER, OLIN W.
74.124

MIRANTE, ANTHONY
82.079

MIRKAY, FRANCIS M.
81.091

MISSISSIPPI RESEARCH AND DEVELOPMENT CENTER
77.071

MISSISSIPPI STATE UNIVERSITY
73.075

MITCHELL, G.J.
77.168

MITCHELL, WILLIAM B.
77.170 77.169 77.007 76.001

MITCHELL, WILLIAM H.
80.079 73.094

MITRE CORPORATION, BEDFORD, MA.
83.095 77.147

MOCENKO, SANDY
82.318

MOCK, S.J.
74.083

AUTHOR INDEX

MOELLERING, HAROLD
83.103 83.026 82.117 82.035 82.022 81.090
79.203 77.183 77.171 75.173 75.161 75.160

MOGG, MARILYN
83.172

MOINESTER, PHILIP
75.028

MOLLOY, A.M.
77.172

MOLONEY, JOHN K.
75.162

MONASH, E.A.
77.233

MONMONIER, MARK S.
82.160 77.173

MONTAGANO, G.A.
73.095

MONTERO, FELIPE J.
76.107

MONTGOMERY COUNTY PLANNING BOARD. MAYRLAND-NATIONAL CAPITAL PARK AND PLANNINC COMMISSION, SILVER SPRINT, MD.
80.037

MONTGOMERY, G.
83.057

MONTGOMERY, J.H.
75.163

MOON, GEORGE C.
83.188 82.212 82.090 80.026 80.025

MOORE, ALAN W., ED.
77.152 77.150 77.074 77.061 77.057 77.010

MOORE, D.
83.043

MOORE, HAROLD D.
82.218

MOORE, HEATHER
83.167

MOORE, W.C.
83.212 83.113

MORAN, G.
75.096

MORATH, STEPHEN R.
77.180

MORE, BOB
76.108

MOREAU, RICHARD
81.132

MOREHOUSE, SCOTT
83.192 79.151 79.150 78.116

MORET, B. M.
82.303

MORGAN, KEN M.
82.074

MORGENSTERN, D.C.
74.034

MORIN, E.J.
79.152 77.174

MORITZ, BARRY K.
76.119 74.077

MORLEY, L.W.
79.195

MORRELL, S.K.
75.043

MORRISON, JOEL L.
80.080 79.068 77.015 76.109 75.164 74.084

MORRISON, JOHN
83.102

MOSCOW INSTITUTE OF SURVEYING AND MAPPING, MOSCOW, U.S.S.R.
77.231 77.210

MOTT, P.G.
75.165

MOWILL, RAGNILD S.
77.175

MOYER, D. DAVID, ED.
81.150 78.118 78.117 77.176 76.110 75.166
74.085 73.134 73.108 73.105 73.099 73.098
73.097 73.096 73.094 73.090 73.071 73.065
73.050 73.047 73.019 73.017 73.014 73.010
73.007 71.055 70.035

MOYER, MELINDA G.
78.097

MOYSEENKO, HELMUT
82.231

MROCZYNSKI, R.P.
81.084 79.153 78.119

AUTHOR INDEX

MRUK, STEVEN
83.115

MULLEN, ROY
79.068

MULLER, JAMES R.
83.023 82.232

MULLER, JEAN-CLAUDE
75.167

MUNKASEY, MICHAEL
81.076

MURAI, SHUNJI
78.122 78.121 78.120

MURCH, R.A.
77.118 74.087 74.086

MURPHY, DENNIS L.
81.095

MURPHY, L.P.
75.168

MURPHY, PETER
74.023

MURPHY, R.C.
79.154

MUSE, GWENDOLYN
74.106

MUSSAKOWSKI, R.S.
82.009

MYERS, VICTOR I.
74.072

MYERS, W. L.
81.185

NAGLE, G.S.
73.127

NAGY, GEORGE
83.139 81.170 80.081 79.156 79.155

NAKAMURA, C.
80.109 78.112 77.177

NAKAMURA, Y.
82.010

NAKE, F.
72.072

NALEPA, RANDOLPH
82.074

NANIWADA, M.
81.067 80.103

NAPTON, DARRELL E.
82.205

NARDOZZA, VINCENT J.
76.143

NARSINGH, PEAR
83.213

NASA. AMES RESEARCH CENTER INSTITUTE FOR ADVANCED COMPUTATION
79.087

NASA. EARTH RESOURCES LABORATORY
80.087

NASA. GEORGE C. MARSHALL SPACE FLIGHT CENTER, HUNTSVILLE, AL.
77.208

NASA. GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.
79.118 79.053

NASA. NATL SPACE TECHNOL LABS, EARTH RESOURCES
82.077

NASH, THOMAS L.
79.157

NATION, DOLF C.
82.062

NATIONAL ACADEMY OF SCIENCES. COMMITTEE ON GEOGRAPHY, WASHINGTON, D.C.
73.100

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
83.089 83.080 83.048 83.046 83.039 83.018
82.058 82.052 79.026 78.123 75.194 75.170
75.169

NATIONAL CAPITAL COMMISSION. RESEARCH AND COMPUTER SERVICES, OTTAWA, ONT.
78.152 76.147 73.124 71.068

NATIONAL CONFERENCE OF STATE LEGISLATURES
82.037

NATIONAL ENERGY SOFTWARE CENTER
81.071

NATIONAL GEODETIC SURVEY, ROCKVILLE, MD.
77.168

AUTHOR INDEX

NATIONAL HEART, LUNG & BLOOD INSTITUTE, BETHESDA, MD.
79.072

NATIONAL LAND SURVEY OF SWEDEN, GAULE
77.184

NATIONAL OCEAN SURVEY. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
75.121

NATIONAL RESEARCH COUNCIL, WASHINGTON DC
83.033

NATIONAL RESEARCH INSTITUTE FOR MATHEMATICAL SCIENCES, PRETORIA, SOUTH AFRICA
75.111

NATIONAL SCIENCE FOUNDATION
77.120

NATIONAL SWEDISH INSTITUTE FOR BUILDING RESEARCH, STOCKHOLM
72.071

NATIONAL SWEDISH ROAD ADMINISTRATION
77.037

NATIONAL TECHNICAL INFORMATION SERVICE
83.094 83.087 83.086 83.084 83.083 83.082
83.079 83.049 83.040 83.010 83.004 83.003
82.146 82.145 82.143 82.142 82.141 82.138
82.136 82.131 82.126 82.125 82.124 82.122
82.070 82.069 82.068 82.057 82.027 81.109
81.108 81.100 81.097 81.096 81.042 80.018
80.017 79.037 79.036 79.035 79.034 78.185
78.184 78.124 74.147 74.146 74.090

NATO ADVANCED STUDY INSTITUTE
75.278 75.277 75.266 75.226 75.225 75.208
75.186 75.183 75.119 75.094 75.067 75.062

NAVAL OCEAN RESEARCH AND DEVELOPMENT ACTIVITY, HYDROGRAPHIC DEVELOPMENT BRANCH
78.072

NAYLOR, ALONZO D.
83.050

NEL, L. D.
81.115

NELSON, B.
83.203

NELSON, DAVID H.
75.171

NELSON, JON
81.140

NERAASEN, TERRANCE G.
83.226

NERGUT, E.G.
72.045

NETHERLANDS SOIL SURVEY INST., WAGENINGEN, NETHERLANDS
74.013

NEUFFER, JOHN A.
76.016

NEUMANN, DANIEL E.
83.174

NEVATIA, RAMAKANT
82.031 81.015

NEVILLE, R.A.
83.123

NEW BRUNSWICK, DEPARTMENT OF NATURAL RESOURCES. FREDRICTON, N.B.
71.010

NEW CASTLE COUNTY, DELAWARE
79.197

NEW COMMUNITY DEVELOPMENT CORP. (HUD), WASHINGTON, D.C.
78.037

NEW JERSEY DEPARTMENT OF COMMUNITY AFFAIRS
73.102

NEW JERSEY. DEPARTMENT OF ENVIRONMENTAL PROTECTION. BUREAU OF MANAGEMENT INFORMATION AND DATA SYSTEMS
80.078

NEW JERSEY. DEPARTMENT OF ENVIRONMENTAL PROTECTION. OFFICE OF CANCER AND TOXIC SUBSTANCES RESEARCH
80.116

NEW JERSEY, DIVISION OF STATE AND REGIONAL PLANNING
79.149

NEW YORK STATE. DEPARTMENT OF ENVIRONMENTAL CONSERVATION. WILDLIFE RESOURCES CENTER
77.159

NEWLAND, W.
82.053

AUTHOR INDEX

NEWMAN, M.
81.020

NEZ, GEORGE
77.205 77.203 74.111

NICHOLAS, J.F.
74.129

NICHOLLS, GREGORY M.
78.160

NICHOLS, DAVID A.
81.188 71.056

NICHOLS, JOHN T.
80.082

NICHOLSON, JOHN K.
82.186

NICKEY, BRADLEY B.
75.172

NICOL, MICHAEL R.
82.051

NIEDERMAIR, F. ROBERT
76.023

NIEDERSAECHSISCHES LANDESAMT FUER BODENFORSCHUNG, GERMANY
75.257

NIEDZWIADEK, HARRY A.
78.125

NIEMANN, BERNARD J. JR.
83.147 80.084 80.083 80.023 79.158 77.052 77.045 76.111 73.101

NIERO, M.
82.059

NIKITIN, A.Z.
82.088

NILSSON, ALF
77.037

NILSSON, NILS J.
77.080

NIPPON ELECTRIC CO. LTD. CENTRAL RESEARCH LABORATIES
80.103

NISEN, WILLIAM G.
79.159 78.052

NITHACK, J.
82.061

NOAA, OFFICE OF AERONAUTICAL CHARTING AND CARTOGRAPHY, ROCKVILLE, MD.
78.032

NOLFI, JAMES R.
76.112

NOMA, ARTHUR A.
82.174

NOONCHESTER, MICHAEL
81.076

NORANDA MINES LTD., NORCOMP DIVISION
82.151

NORDBECK, STIG
77.140

NORDIC INSTITUTE FOR STUDIES IN URBAN AND REGIONAL PLANNING, STOCKHOLM, SWEDEN
75.214

NORDSTRAND, EARL
78.134

NORRIS, JOHN P.
76.113

NORTEY, M.S.
82.253

NORTH AMERICAN INSTITUTE FOR MOLDS. WASHINGTON, D. C.
75.270

NORTH AMERICAN INSTITUTE FOR THE MODERNIZATION OF LAND DATA SYSTEMS MOLDS
78.118

NORTH CAROLINA STATE UNIVERSITY, RALEIGH, N.C.
78.045

NORTH CAROLINA STATE. DEPARTMENT OF ADMINISTRATION. OFFICE OF STATE PLANNING
74.110

NORTH CAROLINA. DEPARTMENT OF ADMINISTRATION LAND RECORDS MANAGEMENT PROGRAM. RALEIGH, N.C.
80.052

NORTH CAROLINA. HOUSE OF REPRESENTATIVES MEMBER
79.057

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, ARLINGTON, TX.
78.139

NORTH DAKOTA REGIONAL ENVIRONMENT ASSESSMENT PROGRAM, BISMARCK
77.207

NORTHBROOK IL.
79.174

NORTHWAY-GESTALT OPERATION
80.098

NORTHWESTERN UNIVERSITY. DEPARTMENT OF GEOLOGICAL SCIENCES, EVANSTON, IL.
75.266 74.135

NORTON, STEVEN W.
83.027

NORVELLE, F. RAYE
81.019

NOSSEIR, M. K.
82.047

NOSSIN, J.
72.093

NOTZ, K.J.
81.081

NOUS RESEARCH CORPORATION, CLEVELAND, OH.
77.103

NOVA SCOTIA. DEPARTMENT OF LANDS AND FORESTS
79.042

NUERNBERGER, CAROL A.
81.208

NUGENT, EDWARD D.
81.137

NUNGESSER, M.K.
81.107

NYBERG, S.
82.015

NYERGES, TIMOTHY L.
83.132

O'CALLAGHAN, J.
81.164

O'CONNOR, JAMES F.
79.160

O'CONNOR, R. PATRICK
83.023 82.298 82.232

O'NEILL, E.M.
75.050

OAK RIDGE NATIONAL LABORATORY, TN.
83.072 82.041 82.007 81.107 81.104 81.081
79.162 79.102 78.081 77.136 76.172 76.163
76.158 76.106 76.099 76.089 76.065 75.259
75.258 75.108 74.115 74.106

ODERWALD, RICHARD G.
82.039

OESTERHELT, GUNTER
81.139

OGILVIE, MARY
79.161 77.178

OHIO STATE UNIVERSITY. DEPARTMENT OF GEODETIC SCIENCE
77.034

OHIO STATE UNIVERSITY. DEPARTMENT OF GEOGRAPHY
77.183 75.161 73.143

OHIO STATE UNIVERSITY, COLUMBUS
79.203 79.109 77.171

OHIO. DEPARTMENT OF NATURAL RESOURCES
77.161 75.142

OKLAHOMA STATE OFFICE OF COMMUNITY AFFAIRS AND PLANNING, OKLAHOMA CITY
73.133

OKUDA, TSUTOMUI
78.122

OLANDER, N.
83.035

OLEINIKOV, A.YA.
76.183

OLSON, A.C.
77.179 76.033

OLSON, DALE E.
82.083 81.139

OLSON, R.J.
82.118 79.162

OLSON, R.W.
78.026

OLSSON, A.
71.057

OLSSON, L.
82.015

OLSTEN, C. JAMES
80.085

AUTHOR INDEX

OMAHA CITY PLANNING DEPARTMENT. MUNICIPAL INFORMATION DIVISION
77.143

OMAHA CITY PLANNING DEPARTMENT, OMAHA,NB.
75.134

OMMANNEY, C. SIMON L.
83.121

ONDREJAS, STEPHEN J.
77.180

ONTARIO HYDRO. LAND USE AND ENVIRONMENTAL PLANNING DEPARTMENT
78.091

ONTARIO HYDRO. ROUTE AND SITE SELECTION DIVISION
80.058

ONTARIO. DEPARTMENT OF JUSTICE. ONTARIO LAW REFORM COMMISSION
71.058

ONTARIO. DEPARTMENT OF MUNICIPAL AFFAIRS, ASSESSMENT DIVISION. ASSESSMENT STANDARDS BRANCH
71.059

ONTARIO. INTERMINISTERIAL COMMITTEE ON GEOGRAPHICAL REFERENCING
78.038

ONTARIO. MINISTRY OF CONSUMER AND COMMERCIAL RELATIONS
73.103 72.073

ONTARIO. MINISTRY OF CONSUMER AND COMMERCIAL RELATIONS. PROPERTY RIGHTS DIVISION
78.105

ONTARIO. MINISTRY OF CONSUMER AND COMMERCIAL RELATIONS. SURVEY TASK FORCE. L.R.M.C.
74.088

ONTARIO. MINISTRY OF HEALTH. AMBULANCE SERVICES BRANCH
78.025

ONTARIO. MINISTRY OF NATURAL RESOURCES
80.061 77.182

ONTARIO. MINISTRY OF NATURAL RESOURCES. MAPPING SERVICES
78.074

ONTARIO. MINISTRY OF NATURAL RESOURCES. TASK FORCE ON GEOGRAPHICAL REFERENCING
78.094 77.181 75.102 74.093 74.089

ONTARIO. MINISTRY OF REVENUE
70.036

ONTARIO. MINISTRY OF REVENUE. REGION OF YORK
78.113

ONTARIO. MINISTRY OF THE ENVIRONMENT. WATER RESOURCES BRANCH
78.168

ONTARIO. MINISTRY OF TRANSPORATION AND COMMUNICATIONS. AERIAL SURVEY SECTION, DOWNSVIEW, ONT.
78.161

ONTARIO. MINISTRY OF TRANSPORTATION AND COMMUNICATIONS
73.126 73.124 73.085 73.084 73.083 73.068
73.067 73.059 73.057

OPALSKI, WILLIAM E.
77.019

OPENSHAW, S.
81.027

OPITZ, BRUCE K.
79.021 77.026

OPSETH, ARTHUR L.
76.114

ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY, SANTA ANA, CA.
77.133

OREGON STATE UNIVERSITY. GEOGRAPHY DEPARTMENT
80.012

ORHAUG, T.
83.035 72.091

ORLOB, GERALD T.
73.104

ORNING, GEORGE W.
75.119 72.074

ORNSTEIN, FRANKLIN H., ET AL.
73.105

ORR ASSOCIATES, INC.
79.164

ORR, JOEL N.
80.086 79.164 79.163

ORSINGER, REGIS J.
78.126

AUTHOR INDEX

ORTH, DONALD J.
76.029

OSLEEB, JEFFREY P.
77.183 75.173

OTEPKA, G.
78.100

OTTOSON, LARS
77.184

OVERSEAS DEV. ADMIN., SURBITON
74.004

OVERSTREET, WILLIAM B.
75.174

OZERNOY, V.M.
81.049

OZONE, MOHAMMAD ID
83.126

P.E.I. DEPARTMENT OF THE ENVIRONMENT AND TOURISM. LAND USE SERVICE CENTRE
72.075

P.S. ROSS AND PARTNERS. MANAGEMENT CONSULTANTS, HALIFAX, N.S.
77.190 77.189

PACIFIC SOUTHWEST FOREST AND RANGE EXPERIMENT STATION, BERKELEY, CA.
77.042 75.172 71.003 70.031

PADDOCK, RICHARD E.
78.078

PAINE, DAVID P.
81.126

PALA, S.
82.148

PALERMO, F.P.
77.164

PALERMO, JOE
79.020

PALIMAKA, J.J.
83.130

PALMER, J.A.B.
75.175

PALMER, N.
82.013

PALMERLEE, THOMAS M.
78.127 74.094 74.091

PALUDAN, C.T.N.
79.192

PAN AMERICAN INSTITUTE OF GEOGRAPHY AND HISTORY. COMMITTEE ON LARGE SCALE AND URBAN SURVEYING AND MAPPING
74.063 74.058 74.016 74.015 74.014

PANSINI, ANTHONY J.
75.176

PANTON, D.J.
75.177

PAPA, ROBERT J.
81.183

PAR TECHNOLOGY CORPORATION
83.025

PARENTEAU, R.
82.276 82.193

PARICK, MICHEAL
83.216

PARK, ARCHIBALD B.
81.045

PARKER, JAMES L.
71.060

PARROTT, ROBERT
79.113

PARSONS, TYLER B.
79.165

PATEL, A.N.
82.229

PATTERSON, FRED A.
80.087

PATTERSON, G. T.
82.306

PATTERSON, JOHN F.
81.022

PATTERSON, TOM
79.101

PATTON, D.R.
79.166

PAUL, CHARLES K.
75.179 75.178 74.073

PAULSON, S.J.
81.023

AUTHOR INDEX

PAVLIDIS, THEO
82.254 82.091

PAYNE, JOHN C.
75.180

PAYNE, ROGER L.
82.181

PAYNE, WALTER C.
77.185

PEARL, MILTON A.
70.037

PEARSON, E.
72.034

PEARSON, MICHAEL
81.131

PEASE, JAMES R.
78.024

PEASE, R.
72.093

PEERY, JERRY N.
82.006

PELEG, SHMUEL
79.167

PELZ, DIETER R.
79.168

PENFOLD, DONALD M.
79.169 73.106

PENNSYLVANIA STATE PLANNING BOARD, HARRISBURG, PA.
70.038

PENNSYLVANIA STATE UNIVERSITY
82.115

PENNSYLVANIA STATE UNIVERSITY. DEPARTMENT OF GEOGRAPHY
78.174

PENNSYLVANIA STATE UNIVERSITY. OFFICE FOR REMOTE SENSING OF EARTH RESOURCES, UNIVERSITY PARK
73.092

PENNSYLVANIA. DEPARTMENT OF ENVIRONMENTAL RESOURCES. BUREAU OF FORESTRY
79.100

PENNY, R.A.
75.181

PEQUET, DONNA J.
79.134

PERCIASEPE, BOB
78.128

PERRY, GEORGE
74.064

PERUCCHIO, RENATO
83.208 82.085

PETCH, ARTHUR
82.318

PETERS, CHARLES T., JR.
83.157

PETERS, IVAN A.
72.076

PETERS, J.R.
70.033

PETERSEN, GARY W.
73.092

PETERSOHN, FRITZ
76.115

PETERSON, CHRISTOPHER J.
81.009

PETERSON, D.
81.102

PETERSON, G. K.
82.306

PETRIE, G.M.
82.257

PETTAPIECE, W.W.
83.219

PETTYJOHN, WAYNE A.
74.100

PEUCKER, THOMAS K.
76.125 76.116 75.185 75.184 75.183 75.182
73.107 73.052 73.051 72.086 72.078 72.077
72.072

PEUQUET, DONNA J.
83.227 83.209 83.062 82.322 82.242 81.166
81.160 79.170 77.186 77.156

PEW, RICHARD
76.048

PFALTZ, JOHN L.
75.186 73.107

PFROMMER, WILHELM L.
75.187

PHILIPS, RICHARD L.
81.190

PHILLIPS, FRED
75.188

PHILLIPS, JOHN O.
76.117 73.108

PHILLIPS, R.
78.140

PHILLIPS, RICHARD L.
79.130

PHOTOSURVEYS (PTY) LTD., BRAAFONTEIN, SOUTH AFRICA
78.006

PIAMONTE, K.E.
81.005

PICKLYK, D.D.
77.187 77.125

PICTOR, D.H.
82.098

PIENOVI, C.
81.060

PIEPGRASS, E.B.
82.195 80.028 78.112 78.001 77.177 77.005

PIERCE, ALBERT I.
70.039

PIERCE, ROBERT R.
80.088

PIONEER NATIONAL TITLE INSURANCE CO., BOSTON, MA.
76.170

PIPPING, FREDERICK
75.189

PISHAROTY, P.
72.095

PISTORIUS, M.
75.111

PIWINSKI, DANA
82.173

PLACE, M.C.
76.118

PLANNING SYSTEMS INC.
83.032

PLANNING SYSTEMS RESEARCH LIMITED, HAMILTON, ONT.
75.227

PLASKER, JAMES R.
79.013

PLATOU, S.W.
75.190

PLUMMER, RALPH W.
78.067

PLUNKETT, G.W.
83.130

PODEHL, W.M.
75.191 74.095 74.092 72.080 72.079

POIKER, T.K.
83.183 82.267

POITEVIN, C.
81.062

POLARIS
75.192 74.150 74.149 74.148 74.096

POLARIS PROJECT. PROPERTY RIGHTS DIVISION. LAND REGISTRATION MANAGEMENT COMMITTEE
79.172 79.171

POLISSAR, L.
81.057

POLK COUNTY. DIVISION OF DEVELOPMENT COORDINATION, BARTOW, FL.
78.049

POLK COUNTY. LAKELAND, FL.
77.078

POPEK, G.
72.086 72.081

PORTER, ALLEN, ET AL.
77.188

PORTER, PHILIP W.
71.040

PORTER, T. ALLEN
83.177 76.060

PORTLAND STATE UNIVERSITY. SCHOOL OF URBAN AFFAIRS
79.063

PORTNER, JAMES
83.147 82.198 81.150

PORTSMOUTH POLYTECHNIC. DEPARTMENT OF GEOGRAPHY, ENGLAND
75.226 75.225

POSTMA, RAYMOND
71.056

POTTER, MEREDITH W.
79.173

POTTS, T.F.
78.129

POULIN, JEAN-NOEL
75.193

POULTON, J.
81.059

POWER, MARGARET A.
75.194

POWERS, WILLIAM T.
79.174

PRASHKER, STEVEN
83.201

PRC (NIGERIA) LTD., MCLEAN, VA.
80.066

PRC INFORMATION SCIENCES CO., MCLEAN, VA.
76.016 74.006

PREMO, LESTER J.
73.109

PRESTON, G.
77.070

PRICE, A.I.
75.195

PRICE, WILLIAM
83.204

PRINCETON UNIVERSITY, N.J.
79.098 79.097

PROCTER, R.M.
76.122

PRYTULA, R.
74.018

PRZEWLOCKI, KATHRYN SANDS
81.014

PUBLIC LAND LAW REVIEW COMMISSION, WASHINGTON, D.C.
70.037

PUITTINEN, D.
83.122

PURDUE UNIVERSITY
81.085 81.084 81.073 81.010 79.153 79.139
79.039 78.119

PYWELL, H. ROSS
78.125 78.021

QUACK, J.
76.069

QUAM, L.
78.061

QUANN, J.
79.053

QUATTROCHI, DALE A.
83.156

QUEBEC. MINISTERE DES TERRES ET FORETS, QUEBEC, P.Q.
75.193

QUEENSLAND. DEPARTMENT OF PRIMARY INDUSTRIES, BRISBANE, AUSTRALIA
77.074 77.061

QUIGLEY, D.F.
72.045

QUINN, E.W.
81.099

QUINN, MIKE
75.196

QUINN, WILLIAM M.
75.197

QUONG, C.
75.014

RADBILL, JOHN R.
82.013

RADFORD, J.S.
71.047

RADIO PHYS. LAB., SRI INTERNATIONAL
83.056

RADO, BURCE Q.
80.088

RADULESCU, D.
78.085

AUTHOR INDEX

RAMSDEN, J.
77.106

RAND CORPORATION, SANTA MONICA, CA.
79.003

RANDOLPH, J.C.
79.175

RANZIGER, HUBERT
82.065

RAPPORT, DAVID
77.191

RASE, WOLF D.
75.198 75.183

RASTATTER, J.A.
75.199

RAUCH, ERIC W.
79.090

RAULIER, J.A.
78.045

RAY, ROBERT M.
81.075

RAYTHEON COMPANY. AUTOMETRIC OPERATIONS, WAYLAND, MA.
75.090 73.110

RCA, CAMDEN, N.J.
79.106 78.086

READ, CHUNG HYE
83.106 83.081

REBOH, RENE
77.080

REDONDO, F.
82.105

REECE, NANCY
77.088

REED, CARL
83.125 79.132 78.135 77.205 77.204 77.203 77.192

REED, JOHN C., JR.
74.111

REED, L.
82.060

REED, LARRY E.
74.100

REED, WALLACE E.
75.004

REES, W.E.
73.111

REEVE, D.E.
77.024

REGIS COLLEGE RESEARCH CENTER
81.078 81.008

REGISTRAR GENERAL, NEW SOUTH WALES, AUSTRALIA
75.101

REGISTRY OF DEEDS. FORSYTH COUNTY. WINSTON-SALEM, N.C.
79.006

REGISTRY OF DEEDS. FORSYTH COUNTY, WINSTON-SALEM, N.C.
74.010 74.008

REGISTRY OF DEEDS. ROCKINGHAM COUNTY. EXETER, N.H.
76.084

REID, I.A.
78.182

REITENBACH, R.H.
77.114

RENEMAN, FRITS
75.200

RENS, F.
72.087

RENSHAW, RICHARD W.
78.130 74.097 73.112

RENSSELAER POLYTECHNIC INSTITUTE. COMPUTER RESEARCH LABORATORY, TROY, N.Y.
82.093 78.064 78.063 77.100 76.071 75.086

RESEARCH TRIANGLE INSTITUTE, RESEARCH TRIANGLE PARK, N.C.
81.075 78.078

RESOURCE EVALUATING & PLANNING DIVISION
82.304

REUSS, E.
82.284

REY, PAUL-AUGUSTION
73.113

RHIND, DAVID W.
83.198 82.268 81.180 81.001 80.089 77.193 76.119 76.026 76.023 71.061

RHODE ISLAND STATEWIDE PLANNING PROGRAM, PROVIDENCE
72.082

RHODE ISLAND UNIVERSITY. CENTER FOR OCEAN MANAGEMENT STUDIES, NARRAGANSETT
78.023

RHODE, R.D.
82.288

RHYNSBURGER, D.
73.114

RIBBINS, LYAN W., ED.
78.136

RICCIARDONE, JOANNE
83.095

RICE CENTER FOR COMMUNITY DESIGN AND RESEARCH. HOUSTON, TX.
76.120 74.102

RICE UNIVERSITY
79.012

RICHARD, MIKE
79.129

RICHASON, BENJAMIN F. (ED.)
82.156

RICHMOND, DALE E.
74.098

RICKERT, JOHN E., ET AL., EDS.
73.143 73.117

RIDER, DEBORAH
79.118

RIDGWAY, JUNE
80.090

RIGBY, DOUGLAS
83.129

RILEY, N.W.
78.131

RILEY, SHARON I. (ED.)
81.120

RIORDAN, CAROL
77.088

RIORDAN, WILLIAM T.
78.132

RIPPLE, BILL
79.181

RIPPON, T.E.
75.201

RISK, R.C.B.
71.062

RITCHIE, R.G.
82.265 82.203

RITCHIE, W.D.
75.202

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, RIVERSIDE, CA.
78.186

ROACH, JOHN T.
74.101

ROBBINS, MICHAEL L.
73.078 72.058

ROBE, E. LLEWELLYN
76.029

ROBERTS, M.C.
79.175

ROBERTS, P.A.
82.046 81.011

ROBERTS, WILLIS F.
80.091 79.178 79.177 79.176 79.129 78.133 76.121 75.204 75.203 74.099 73.115 70.041 70.040

ROBERTSON, BILL
79.147

ROBERTSON, J.R.
75.212

ROBERTSON, JOHN L.
73.027

ROBINETTE, ALAN D.
78.134 77.031

ROBINSON, DAVID W.
78.107

ROBINSON, J.
83.080

ROBINSON, J.E.
79.179

ROBINSON, S.C.
72.083

ROBINSON, VINCENT B.
82.188 81.145

ROBISON, A.D.
83.058

ROCHESTER INST. OF TECH.
83.066

ROCKAWAY, JOHN D.
75.205

ROCKEY, E.
75.212

ROCKWOOD, ALYN P.
81.055

ROCKY MOUNTAIN FOREST AND RANGE EXPERIMENT STATION, FORT COLLINS, CO.
78.107

RODDICK, J.A.
75.123

RODGERS, K.
72.092

RODRIGUE, M.
83.128

RODRIGUES, MARCOS
83.200

ROEX, HERSCHEL W.
79.145

ROFFE, KAREN A.
77.194

ROGERS, CLARK D.
71.063

ROGERS, EDWARD R.
77.195

ROGERS, ROBERT H.
82.176 77.196 74.100

ROGERS, STEVEN P.
82.107

ROHARDT, SUSANNE
83.189

ROHDE, FREDERICK W.
82.040

ROITT, DARYLL D.
81.207

ROME AIR DEVELOPMENT CENTER, N.Y.
77.019 74.021

ROSENFELD, AZRIEL
83.007 82.269 82.255 82.019 79.167 72.091

ROSENTHAL, E.
77.104

ROSENTHAL, RICHARD L.
82.162 82.144 82.043

ROSS, G.A.
82.226

ROSS, HARRY D.
81.083

ROSS, J.H.
77.109

ROTHNIE, JAMES B.
77.197

ROTHWELL, DAVID C.
77.199 77.198

ROTOFF, BASIL M.
70.042

ROUSE, J.T.
76.122

ROW, CLARK, ED.
75.255 75.212 75.171 75.154 75.140 75.072

ROWAN, MICHAEL J.
83.042 81.141

ROWE, PETER G.
79.012 77.201 77.200 76.123 74.102

ROWLAND, E. BRUCE
82.177

ROYAL AIRCRAFT ESTABLISHMENT
82.046 81.036 81.011

ROYAL COLLEGE OF ART EXPERIMENTAL CARTOGRAPHY UNIT, LONDON, ENGLAND
75.240

ROYAL SOCIETY
83.011

RUCKER, W.B.
72.054

RUDEFORD, C.C.
75.206

RUE, DARRYL L.
82.273 82.182

AUTHOR INDEX

RUFF, JACOB F.
70.028

RUFFIN, BYRON W.
78.072

RUNGE, CARLISLE P.
72.084

RUNKA, G.G.
74.103

RUSHTON, GERARD
77.165

RUSSELL, ROBERT M.
75.207 71.003 70.031

RUTGERS STATE UNIVERSITY, NEW BRUNSWICK, N.J.
75.211 75.117

RUTZ, R.A.
82.007

RUYS, JOSEPH P.
83.038

RYAN, HOLLIS F.
76.022 74.113

RYERSON, R.A.
75.097 75.096

RYLAND, W. EUGENE
82.173

RYSTEDT, BENGT
77.202 76.124

SAASTAMOINEN, J.
79.191 79.014

SAILOR, JOHN K.
80.092

SALLAWAY, PAM
83.178

SALMEN, LARRY
78.135 77.205 77.204 77.203

SALMONA, JEAN
73.116

SALOMA, J.
72.067 72.066 72.065

SALOMONSSON, OWE
71.052 70.001

SALTER, L.
81.181

SALTMAN, ROY G.
82.192

SAMET, HANAN
83.210 83.007 82.323 82.239 82.019 81.168 81.167

SAMPSON, R.J.
75.208

SAN DIEGO COMPREHENSIVE PLANNING ORGANIZATION
79.113

SANDERS, J.L. (ED.)
82.280

SANDERS, P.A.
83.088 81.077

SANDIA NATIONAL LABS.
83.071 83.068

SANDS MEASUREMENT CONCEPT CORP.
81.014

SARRAT, D.
81.181

SATHARANOND, V.
81.129

SATTERWHITE, MELVIN B.
82.018

SAUER, E. KARL
82.163

SAUKKOLA, PEKKA
83.051

SAWAYAMA, GARY
79.180

SAWCHUK, ALEXANDER A.
81.015

SCACE, ROBERT C.
81.125

SCHALL, LARRY J.
82.204

SCHALLA, R.
81.092

SCHANEGGER, JOSEF
79.146

SCHATZ, HARRY
74.104

SCHENK, TONY
81.200

SCHENKERMAN, STANLEY
76.144

SCHEURWATER, JAN
83.225

SCHLESINGER, JERRY
79.181 78.136 77.206

SCHLUETER, JOSEPH J.
82.174

SCHLUMBERGER WELL SERV., HOUSTON, TX.
78.010

SCHMIDT, ALLAN H.
79.182 79.080 78.137 76.125 75.209 73.117

SCHMIDT, JAMES G.
75.210

SCHMIDT, WARREN E.
83.197 76.126

SCHMITT, ROLF R., ED.
81.053 78.156 78.139 78.134 78.130 78.128
78.127 78.117 78.114 78.106 78.103 78.097
78.095 78.089 78.088 78.087 78.077 78.049
78.037 78.014

SCHNEIDER, DEVON M.
79.184 79.183

SCHNEIDER, FRED E.
77.207

SCHNEIDER, J.B.
83.207 81.057

SCHNEIDER, JAN S.
83.038

SCHNEIDER, STANLEY R.
81.123

SCHNEIDER, WILLIAM L.
83.160

SCHOFER, J.P.
75.211

SCHOFIELD, JACK
74.105

SCHOLL, M.
82.289

SCHOWENGERDT, R.
83.005

SCHREIBER, R. KENT
74.106

SCHREIER, H.
79.185

SCHROCK, BRYCE, L.
80.093

SCHULTZ, ROBERT J.
79.165

SCHUMACHER, B.G.
71.065

SCHUSTER, STEWART A.
73.008

SCHUT, G.H.
76.128 76.127

SCHWARZ, CHARLES R.
82.012

SCHWARZBART, GIDEON
76.129 75.212 74.064

SCHWEITZER, RICHARD H., JR.
75.213 74.108 74.107

SCIENCE APPLICATIONS, INC., GOLDEN, CO.
79.186

SCOGGINS, DORIS
70.043

SCOTT, HAROLD
79.202

SCOTT, RONALD F.
80.052

SCS, MD
76.131

SEARS, M.P.
83.068

SEEMULLER, WILLIAM W.
82.040

SEITZ, ROBERT N.
77.208

SELANDER, KRISTER
75.214 71.057 71.052 70.044 70.001

SELDEN, DAVID D.
82.172

SELLECK, C.B.
83.068

AUTHOR INDEX

SENN, H.
83.059

SERRAJIAN, NEVAIRE M.
76.029

SERVANT, DUNBRACK, MCKENZIE AND MACDONALD LIMITED
77.190 77.189

SEUFFERT, PETER
77.209

SEYMOUR, GAYLE A.
79.187

SGOUROS, T.A.
83.036

SHAPIRO, LINDA G.
78.138

SHAPIRO, NORMAN Z.
79.003

SHARP, JOHN V.
76.060 72.016

SHARP, W. RONALD
72.116

SHARPE, CARL P.
74.102

SHARPNACK, DAVID A.
75.207 71.003 70.031

SHEEHAN, DAVID E.
79.188

SHELBERG, MARK C.
83.026 82.117 82.035

SHELLEY, B.M.
81.064

SHELMAN, C.B.
78.103

SHELTON, RONALD L.
80.094 76.130

SHELTON, THOM
78.139

SHEPHERD, A.D.
77.131

SHERSTONE, D.A.
78.182

SHETTEL, JR., D.L.
82.055

SHIELDS, J.A.
80.070

SHIELDS, ROBERT L.
76.131

SHINE, JAMES A.
82.030

SHINN, R.D.
82.011

SHIRTLIFFE, GLENN MITCHELL
83.104

SHIRYAER, E.E.
77.210

SHLIEN, S.
83.134

SHNEIER, M.
81.169

SHOLFIELD, THOMAS G.
71.066

SHOTWELL, R.L.
76.118

SHUMATE, W.W.
75.215

SHWARTZ, STEVEN P.
83.024

SIBERT, JOHN L.
82.283 79.189 79.130 78.141 78.140

SICHERMAN, A.
81.049

SIDOR, D.
83.077

SIEKIERSKA, EWA
82.216

SIGLER, GEORGE B.
78.060

SILKA, LYLE R.
81.047

SILVA, RAQUEL S.
83.200

SILVER, JACOB
80.095 76.132 74.080

SIMMONDS, ROBERT L.
79.137 79.078 76.134 76.133

AUTHOR INDEX

SIMMS, ROBERT A.
81.018

SIMON FRASER UNIVERSITY. DEPARTMENT OF GEOGRAPHY, BURNABY, B.C.
79.175 79.075 76.116 75.185 75.183 75.182
73.107 72.078

SIMON, K.W.
75.216

SIMONETT, D.S.
78.142 77.223 72.093

SIMPSON, R. LARRY
83.175 77.211 76.135 75.217

SIMPSON, ROBERT B.
73.118 72.085

SINCLAIR, A.J.
78.143 75.218 75.163

SINCLAIR, ROBERT
76.060

SINGER, DONALD
76.046

SINGH, J.
76.136

SINNOTT, D.
82.119 82.053

SINTON, DAVID F.
80.055 79.190 72.087 72.086

SIPPEL, J.
75.219

SIZER, JOSEPH E.
73.120 73.119

SIZLINGER, DENIS D.
74.109

SKABURSKIS, ANDREYS
75.220

SKAFF, MICHAEL S.
75.221

SKALET, C.D.
82.256

SKINNER, WILLIAM
74.110

SKOLFIELD, THOMAS G.
72.088

SLANEY, V.R.
81.121 78.148

SLEDGE, BRENDA
74.005

SLOCUM, JONATHAN
77.080

SLOTTOW, EUGENE
79.025

SMART, CHARLES W.
82.177

SMEDES, HARRY W.
75.222 74.111

SMIT, LOUIS
81.093

SMITH, ANDREE YVONNE
80.096

SMITH, BARRY
83.159 81.111

SMITH, CABY C.
76.137 75.223

SMITH, D.R.
81.049

SMITH, DAVID V.
74.112

SMITH, DOYLE G.
81.133

SMITH, H. GREGORY
79.117

SMITH, J.
81.164

SMITH, J.H.
82.112

SMITH, J.L.
77.152

SMITH, J.W.
79.056

SMITH, K.
82.272

SMITH, KENNETH WALTER
82.157

SMITH, LOWELL KENT
80.033

SMITH, MICHAEL
81.140

SMITH, NORMAN
79.023

SMITH, P.
82.086

SMITH, R.A.
79.191 75.195

SMITH, ROGER
77.185

SMITH, STEVE
76.108

SMITH, T.R.
78.142

SMITH, VICTOR G., ED.
75.122

SMITH, WAYNE
79.078

SMITH, WILLIAM H.
78.144

SMOLIN, HARLAN
81.053 76.054

SMYTH, C. STEPHEN
83.132

SNIDER, M.A.
83.070 83.014

SNIDERMAN, LAWRENCE
75.120

SNOW, EDWARD
76.034

SOCHER, ROBERT M.
82.028

SOIL CONSERVATION SERVICE OF NEW SOUTH WALES, SYDNEY, AUSTRALIA
77.150

SOIL SURVEY OF ENGLAND AND WALES, ABERYSTWYTH
75.206

SOLOMON, L.
76.138

SOLOSKI, R.B.
74.113

SOMERS, REBECCA M.
83.182 82.195

SONICRAFT, INC.
83.009

SOONG, H.P.
81.058

SOUTH DAKOTA STATE UNIVERSITY. REMOTE SENSING INSTITUTE
79.211

SOUTH DAKOTA STATE UNIVERSITY, BROOKINGS, S.D.
77.065

SOUTH DAKOTA. STATE PLANNING BUREAU
79.181

SOUTH FLORIDA REGIONAL PLANNING COUNCIL, MIAMI, FL.
76.139 75.224

SOUTHARD, RUPERT B.
76.156

SOUTHEAST WISCONSIN REG. PLANN. COMM., WI.
77.232

SOUTHWEST CENTER FOR URBAN RESEARCH, HOUSTON, TX.
77.201 77.200

SPANN, G.W.
79.192 76.140

SPANNER, M. A.
82.106

SPECTRAL DATA CORPORATION
82.275 82.274

SPENCER, J.P.
82.178

SPIES, K.P.
81.023

SPIVAC, GARY
78.109

SPOFFORD, PAUL R.
82.033

SPRAGUE, PERCIVAL TOM
79.193

SPRUNT, B.F.
75.226 75.225 70.045

SPURR, PETER T.
71.067

SRI INTERNATIONAL. MENLO PARK, CA.
78.061

ST. REGIS PAPER CO.
81.064

STACEY, GARY S.
76.141

STAFF, ILENE
79.194

STAGNITTI, F.
81.164

STANDARD OIL COMPANY
79.065

STANFORD RESEARCH INSTITUTE, MENLO PARK, CA.
77.080 77.014 76.013

STANFORD UNIVERSITY. DEPARTMENT OF GEOLOGY, STANFORD, CA.
79.089

STANFORD UNIVERSITY. DEPARTMENT OF INDUSTRIAL ENGINEERING, CA.
75.269

STANHOPE, TERRY
75.227 72.092

STARR, LOWELL E.
83.168 82.214

STATE OF MINNESOTA
73.121

STATE OF MINNESOTA. DEPARTMENT OF ADMINISTRATION
72.064

STATE OF NEW JERSEY. DEPARTMENT OF COMMUNITY AFFAIRS, DIVISION OF STATE AND REGIONAL PLANNING
73.122

STATE OF NEW YORK. OFFICE OF PLANNING SERVICES
72.089

STATE OF NEW YORK. OFFICE OF PLANNING SERVICES. DIVISION OF PLANS AND ANALYSIS
72.033

STATE OF WASHINGTON. OFFICE OF COMMUNITY DEVELOPMENT
73.027

STATE OF WISCONSIN. DEPARTMENT OF ADMINISTRATION
72.090

STATE UNIV. COLLEGE OF NEW YORK AT ONEONTA
78.005

STATE UNIVERSITY OF NEW YORK
79.011

STATE UNIVERSITY OF NEW YORK AT BINGHAMTON
78.083

STATE UNIVERSITY OF NEW YORK AT BINGHAMTON. DEPARTMENT OF GEOGRAPHY
77.124

STATE UNIVERSITY OF NEW YORK AT BUFFALO
79.170 79.133 77.029

STATE UNIVERSITY OF NEW YORK AT BUFFALO. DEPARTMENT OF GEOGRAPHY
79.131 77.040 75.039

STATE UNIVERSITY OF NEW YORK AT BUFFALO. GEOGRAPHIC INFORMATION SYSTEMS LABORATORY
78.020 78.019 77.156

STATE UNIVERSITY OF NEW YORK. SCHOOL OF ENVIRONMENTAL AND RESOURCE ENGINEERING, SYRACUSE N.Y.
77.020

STATE UNIVERSITY OF NEW YORK, CENTER SCI. STUDY NAT. RESOURCES, BINGHAMTON, NY
78.084

STEGENA, L.
74.114

STEINER, DEITER
77.223 72.095 72.094 72.093 72.092 72.091

STEINER, J.
72.115

STEINGRABER, DORIS
78.145

STEINITZ, CARL
78.146

STEINKE, GEORGE
76.119

STEL, H.E.
75.043

STELNER, DIETER
82.240

STEM, JAMES E.
75.033

STEPHANSSON, O.
75.029

STEPHENSON, M.
72.096

STEPHENSON, R.L.
74.115 74.106

STEPHER, P. FREDERICK
76.023

STERNITZ ROGERS ASSOCIATES INCORPORATED, CAMBRIDGE, MA.
75.228

STEVENS INSTITUTE OF TECHNOLOGY. CENTER FOR MUNICIPAL STUIES AND SERVICES, HOBOKEN, N.J.
77.135

STEVENSON AND KELLOGG LTD., MANAGEMENT CONSULTANTS
76.142

STEVENSON, D.W.
75.229

STEWART, MACKEEN AND COVERT
77.190 77.189

STEWART, R.B.
81.046

STIES, M.
83.013

STINE, GORDON E.
76.143

STOCKHOLM COUNTY COUNCIL. REGIONAL PLANNING OFFICE
77.087

STOCKMAN, GEORGE
78.147

STOCKTON STATE COLLEGE. MANAGEMENT SCIENCES
73.143 73.117

STOKES, CHARLES J.
76.144

STOLL, JACK K.
74.009

STONER, E.R.
82.109

STOVER, RICHARD
83.116

STRAHLER, ALAN H.
83.053 82.106 81.072

STRAIN, J. ROBERT
82.153

STRAND, R.H.
82.041

STRANGE, KENNETH B.
80.097

STREED, P.G.
75.119

STREET, G.S.B.
75.230

STREWIG, LARRY
83.038

STRIFE, DIANE E.
82.128

STROME, W.M.
79.195 79.142 78.148

STRONG, WAYNE, L.
82.150

STURGEON, K.B.
78.131

STUVE, HORTON
77.212

SUGARBAKER, LARRY J.
83.193

SUMMER, HARRY H.
73.123

SURETTE, RALPH
78.149

SUTHERLAND BROWN, A.
78.143

SUTTERLIN, P.G.
79.196 75.231 74.116

SVATOS, VERN C.
79.197 77.213

SWAIN, P.H.
81.085 81.010

SWAN, PHILIP
74.054

SWANK, ROBERT
82.199 78.109

SWANN, D.H.
70.046

SWANN, RICHARD
80.098 78.150

SWANSON, FREDERICK J.
82.072

SWANSON, W.G.
77.109 73.057

SWANSTON, DOUGLAS N.
82.072

SWEDEN. CENTRAL BOARD FOR REAL ESTATE DATA
80.004

SWEDEN. CENTRAL BOARD FOR REAL ESTATE DATA. DEVELOPMENT DIVISION
73.132

SWEDEN. NATIONAL CENTRAL BUREAU OF STATISTICS, STOCKHOLM
77.116

SWITZER, P.
75.233

SWITZER, WILLIAM A.
79.020 78.151 76.146 76.145 75.232 75.097 75.096

SYCHUK, MAURICE J.
75.234

SYMONS, D.C.
81.201 78.152 76.147 73.125 73.124 72.097 71.068 70.048 70.047

SYNECTICS CORP.
83.023 82.038 81.020 77.026

SYRACUSE UNIVERSITY. DEPARTMENT OF GEOGRAPHY
77.173

SYRACUSE UNIVERSITY. DEPARTMENT OF GEOLOGY, SYRACUSE N.Y.
79.179

SYSTEM DEVELOPMENT CORPORATION. CHARLOTTE IMIS PROJECT
73.137

SYSTEM DEVELOPMENT CORPORATION, GAITHERSBURG, MD.
77.139

SYSTEMHOUSE. GRAPHIC DIVISION
80.071

SYSTEMS, URBAN DESIGN
75.285

TABAKMAN, Z.
82.246

TABEI, M.
82.010

TAKIKAWA, K.
83.134

TALCOTT, RICHARD L.
77.082 76.063 75.076 75.074 74.117 74.047 73.054

TALVILA, ILMAR
78.153

TAMM-DANIELS, FREDERICK L.
82.183

TAMMINEN, M.
81.079 81.029 81.028 81.004 81.003 81.002

TAMPA BAY REGIONAL PLANNING COUNCIL. ST. PETERSBURG, FLORIDA
72.098

TANNER, PETER
83.135

TARNOWSKI, ANDREW A.
81.041 81.021

TASK FORCE AND NATURAL RESOURCES AND LAND USE INFORMATION AND TECHNOLOGY
75.235

TASK FORCE ON NATIONAL SURVEYING AND MAPPING
78.154

TATEISHI, RYUTARO
78.122 78.121

TAYLOR, CYRUS C.
83.027 81.040

TAYLOR, D.M.
83.190

TAYLOR, D.R.F.
83.201 82.235 77.216 77.215 77.214 76.166 75.236 73.126 72.099 71.069 70.049

AUTHOR INDEX

TAYLOR, D.R.F., ED.
80.099 78.183 78.155 78.152 78.129 78.108 78.048 78.043 78.008 76.174 76.173 76.168 76.167 76.149 76.148 76.147 76.145 76.124 76.090 76.077 76.024 76.014 76.011

TAYLOR, L.
74.118

TAYLOR, M. LYNN
76.016 74.006

TAZELAAR, JAMES
81.094

TECHNICAL COMMITTEE #1, STANDARDS FOR THE CLASSIFICATION OF TOPOGRAPHIC FEATURES
82.165

TECHNICAL UNIVERSITY GRAZ. INSTITUTE FOR NATIONAL SURVEYING AND PHOTOGRAMMETRY, GRAZ, AUSTRIA
78.101

TECHNICAL UNIVERSITY OF VIENNA. INSTITUTE OF PHOTOGRAMMETRY, GUBHAUSSTRABE 27-29, A 1040 VIENNA, AUSTRIA
78.100

TECHNICOLOR GRAPHIC SERVICES, INC. EROS DATA CENTER, SIOUX FALLS, ND.
80.046

TECHNOLOGY SERVICE CORPORATION, SANTA MONICA, CA.
79.064

TEDROW, LUCKY M.
80.100

TEICHOLZ, ERIC
78.156 76.150

TEILLET, P.M.
80.048

TEL AVIV UNIVERSITY. ISRAEL
78.181 78.044 75.278 75.277

TEN HAGEN, PAUL J.W.
82.082 82.080

TENG, APOLLO T.
83.142 83.112

TENNESSEE VALLEY AUTHORITY, FOREST MANAGEMENT
79.086

TERENZETTI, JOAN A.
82.038

TERRA SYST. INT., SAN ANTONIO, TX.
79.074

TESSAR, PAUL A.
77.206

TESSARI, E.J.
75.238 75.237 74.121 74.120 74.119

TEXAS A&M UNIVERSITY, COLLEGE STATION REMOTE SENSING CENTER
81.105

TEXAS A&M UNIVERSITY, TX.
74.138

TEXAS NATURAL RESOURCES INFORMATION SYSTEM
80.101 79.218 77.217

THALLON, K.P.
79.198

THALMANN, DANIEL
83.137

THE HYDROLOGIC ENGINEERING CENTER. PLANNING ANALYSIS BRANCH, DAVIS, CA.
80.035

THE MORGAN FAIRCHILD GROUP, SEATTLE, WA.
80.115

THEIS, RICHARD F.
82.184

THERRIEN, CHARLES W.
83.205

THOM, RICHARD H.
79.168

THOMAS, GARLAND L.
73.063

THOMAS, HUGO F.
77.218

THOMASSON, R.D.
74.122

THOMPSON, C.N. (COLONEL)
78.158

THOMPSON, E.J.
75.095

THOMPSON, G.E., ED.
75.097

THOMPSON, J.
78.150

THOMPSON, L.
83.128

THOMPSON, M.D. (ED.)
82.159

THOMPSON, MICHAEL R.
82.028

THOMPSON, MORRIS J.
76.151

THOMPSON, MORRIS M.
75.239

THOMSON, D.
77.049

THOMSON, F.J.
83.088 81.186 81.077

THOMSON, STEPHEN C.
76.152

THORLEY, G.
72.095

THORNBURN, G.
73.127

THORNBURY, G.
82.053

THORNHILL, R.R.
83.021

THORPE, L.W.
75.240

TICHENOR, M.
75.183

TILL, S.M.
83.123

TILMANN, S.E.
77.219

TIMCHUK, N.F.
77.220

TINLINE, R.
76.136

TISCHLER, PAUL S.
80.102

TOBLER, W.R.
79.199 78.142 76.153 75.241 70.050

TOEWS, N.A.
81.114

TOM, CRAIG
74.123

TOM, HENRY
81.128 79.200 77.221

TOMLIN, C. DANA
82.295 79.201

TOMLINSON, ROGER F., ED.
82.033 81.162 79.130 77.231 77.223 77.222
77.220 77.210 77.156 77.114 77.108 77.040
77.038 77.027 76.157 76.156 76.155 76.154
75.242 72.101 72.100 72.095 72.094 72.093
72.092 72.091 72.087 72.086 72.018 71.070
70.052 70.051 70.050 70.030 70.008

TONER, WILLIAM
75.104

TONTTI, M.
77.101

TOOKER, JOHN S.
72.102

TORLEGARD, K.
81.173

TOUMA, EDWARD A.
71.071

TOWNSHED, J.B.G.
82.281

TOWNSHEND, J.R.G.
83.012

TRANG, CAO THO
78.157

TRASENTE, NEAL G.
79.202

TRAVIS, MICHAEL R.
75.243

TRAYLOR, CHARLES T.
77.224

TRELINSKIE, E.G., JR.
75.168

TRYGAR, T.A.
77.167

TSURUTANI, TATEYUKI
81.067 80.103

TUCKER, C.J.
83.012

AUTHOR INDEX

TUCKER, R.
72.062

TUCKER, T.C.
76.158

TUCKER, W.B.
74.083

TUEL, WILLIAM G., JR.
78.159

TUINHOF, NANNING B.
78.160

TULEY, P.
74.004

TUORI, M.
82.100

TURINETTI, JAMES D.
74.124

TURKE, K.
75.244

TURNER COLLIE & BRADEN INC., HOUSTON, TX.
80.097

TURNER, A. KEITH
80.104 78.170 78.162 74.111

TURNER, BRIAN J.
82.220 82.115

TURNER, J.B.
78.161 71.049

TURNER, SCOTT
79.203

TURNER, W.
75.245

TWEEDIE, STEPHEN W.
73.133

U.S. STEEL CORP. RES. LAB., MONROEVILLE, PA.
78.035

U.S.S.R. STATE SCIENTIFIC RESEARCH CENTRE, KIEV, U.S.S.R.
77.220

UCLA AND WILLIAM JEPSON
79.125

UHRIN, DAVID C.
77.225

UNBF DEPARTMENT OF ECONOMICS
76.095

UNCAPHER, KEITH W.
83.092

UNESCO. DIVISION OF EARTH AND ENVIRONMENTAL SCIENCES
75.268 75.257 75.240 75.231 75.222 75.202
75.190 75.189 75.137 75.123 75.118 75.099
75.034 75.029

UNIT, ROYAL COLLEGE OF ART. EXPERIMENTAL CARTOGRAPHY
71.064 71.026

UNITED NATIONS AD HOC GROUP OF EXPERTS ON CADASTRAL SURVEYING AND MAPPING
74.016

UNITED STATES. ARMY CORPS OF ENGINEERS
79.209

UNITED STATES. ARMY ENGINEER TOPOGRAPHIC LABORATORIES. COMPUTER SCIENCES LABORATORY
80.093

UNITED STATES. ARMY ENGINEER WATERWAYS EXPERIMENT STATION. ENVIRONMENTAL LABORATORY. VICKSBURG, MS.
79.206

UNITED STATES. ARMY TOPOGRAPHIC COMMAND. WASHINGTON, D.C.
71.048

UNITED STATES. ARMY TOPOGRAPHIC LABS. FORT BELVOIR, VA.
74.057

UNITED STATES. BUREAU OF INDIAN AFFAIRS, WASHINGTON, D.C.
73.140

UNITED STATES. BUREAU OF LAND MANAGEMENT. OREGON STATE OFFICE
75.171

UNITED STATES. BUREAU OF MINES, WASHINGTON, D.C.
77.237

UNITED STATES. BUREAU OF THE CENSUS
80.095 79.200 76.159 76.090 76.011 75.247
75.246 74.107 73.129 73.128 72.105 72.104
72.103 72.042 71.074 71.073 70.053

UNITED STATES. BUREAU OF THE CENSUS. GEOGRAPHY DIVISION. WASHINGTON, D.C.
75.264 75.213 75.156 75.047 75.040 75.026
75.017 72.068

AUTHOR INDEX

UNITED STATES. BUREAU OF THE CENSUS. STATISTICAL RESEARCH DIVISION
77.241

UNITED STATES. COMMUNITY AND ECONOMIC DEVELOPMENT DIVISION. GENERAL ACCOUNTING OFFICE, WASHINGTON, D.C.
78.163

UNITED STATES. DEFENSE MAPPING AGENCY
77.226

UNITED STATES. DEFENSE MAPPING AGENCY AEROSPACE CENTER. ADVANCED TECHNOLOGY DIVISION, ST. LOUIS AFS, MO.
78.060

UNITED STATES. DEFENSE MAPPING AGENCY AEROSPACE CENTER. AEROSPACE CARTOGRAPHY DEPARTMENT, TECHNIQUES OFFICE, ST. LOUIS AFS, MO.
78.057

UNITED STATES. DEFENSE MAPPING AGENCY. TOPOGRAPHIC CENTER. WASHINGTON, D.C.
76.049 76.019

UNITED STATES. DEPARTMENT OF AGRICULTURE.
83.074 78.117 78.024 77.176 73.096

UNITED STATES. DEPARTMENT OF AGRICULTURE. AGRICULTURE RESEARCH SERVICE, BELTSVILLE, MD.
78.027

UNITED STATES. DEPARTMENT OF AGRICULTURE. ECONOMIC RESEARCH SERVICE. WASHINGTON, D.C.
75.275

UNITED STATES. DEPARTMENT OF AGRICULTURE. FORESTRY SERVICE
79.120 78.164 75.251 75.212 75.140 74.125

UNITED STATES. DEPARTMENT OF AGRICULTURE. NATURAL RESOURCES ECONOMICS DIVISION
78.118

UNITED STATES. DEPARTMENT OF AGRICULTURE. SOIL CONSERVATION SERVICE. HYATTSVILLE, MO.
75.127

UNITED STATES. DEPARTMENT OF AGRICULTURE. SOUTHEASTERN EXPERIMENT STATION
79.138

UNITED STATES. DEPARTMENT OF COMMERCE
83.076

UNITED STATES. DEPARTMENT OF COMMERCE. BUREAU OF THE CENSUS
79.215 78.173 72.119 71.072 70.054

UNITED STATES. DEPARTMENT OF COMMERCE. STATISTICAL RESEARCH BRANCH
72.029

UNITED STATES. DEPARTMENT OF ENERGY
78.165

UNITED STATES. DEPARTMENT OF ENERGY. LARAMIE ENERGY TECHNOLOGY CENTER. LARAMIE, WY.
79.056

UNITED STATES. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
79.017 76.139

UNITED STATES. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT. URBAN INFORMATION SYSTEMS INTER-AGENCY COMMITTEE, USAC
72.045

UNITED STATES. DEPARTMENT OF NATURAL RESOURCES, OLYMPIA, WA.
73.066

UNITED STATES. DEPARTMENT OF THE ARMY
83.075 83.029

UNITED STATES. DEPARTMENT OF THE INTERIOR
75.249 75.248

UNITED STATES. DEPARTMENT OF THE INTERIOR. BUREAU OF LAND MANAGEMENT
79.128 79.045 75.250

UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY
82.095 80.049 79.219 79.140 79.085 79.084
79.013 78.054 78.012 77.229 77.179 77.170
77.169 77.086 77.009 76.151 76.126 76.103
76.086 76.074 76.073 76.046 76.035 75.256
75.222 75.104 75.034 75.025 75.005 75.004
74.111 71.032

UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. GEOGRAPHIC APPLICATIONS PROGRAM. WASHINGTON, D.C.
73.004

UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. TOPOGRAPHIC DIVISION
75.252 75.081 74.126 73.130 72.109

UNITED STATES. DEPARTMENT OF THE INTERIOR. GEOLOGICAL SURVEY. WATER RESOURCES DIVISION
75.253

UNITED STATES. DEPARTMENT OF TRANSPORTATION
72.108

UNITED STATES. DEPARTMENT OF TRANSPORTATION. FEDERAL AVIATION ADMINISTRATION
71.075

UNITED STATES. DEPARTMENT OF TRANSPORTATION. OFFICE OF SYSTEMS ANALYSIS AND INFORMATION
72.107 72.106

UNITED STATES. DEVELOPMENT OF THE INTERIOR. BUREAU OF LAND MANAGEMENT. DIVISION OF CADASTRAL SURVEY
80.054

UNITED STATES. ENVIRONMENTAL PROTECTION AGENCY
79.145

UNITED STATES. ENVIRONMENTAL PROTECTION AGENCY MERL. DRINKING WATER RESEARCH DIVISION
80.024

UNITED STATES. FISH AND WILDLIFE SERVICE. OFFICE OF BIOLOGICAL SCIENCES
76.160

UNITED STATES. FOREST SERVICE REGION 1. MISSOULA MO.
75.197

UNITED STATES. FORESTRY SERVICE. BERKELEY, CA.
75.009

UNITED STATES. FORESTRY SERVICE. ENGINEERING STAFF UNIT, WASHINGTON, D.C.
78.068

UNITED STATES. FORESTRY SERVICE. GEOMETRONICS SERVICE CENTER, SALT LAKE CITY, UT.
78.031

UNITED STATES. FORESTRY SERVICE. MANAGEMENT SCIENCES STAFF.
76.129

UNITED STATES. FORESTRY SERVICE. PACIFIC SOUTHWEST FOREST AND RANGE EXPERIMENT STATION, BERKELEY, CA.
75.243

UNITED STATES. FORESTRY SERVICE, INTERMOUNTAIN REGION
73.006

UNITED STATES. GEOLOGICAL SURVEY. TOPOGRAPHIC DIVISION. DIGITAL APPLICATIONS TEAM
77.228

UNITED STATES. GEOLOGICAL SURVEY, RESTON, VA.
78.040

UNITED STATES. HOUSE OF REPRESENTATIVES
71.076

UNITED STATES. NATIONAL BUREAU OF STANDARDS. TECHNICAL ANALYSIS DIVISION, WASHINGTON, D.C.
72.045

UNITED STATES. NATIONAL RESEARCH COUNCIL. SPACE APPLICATIONS BOARD
75.254

UNITED STATES. OFFICE OF ECONOMIC RESEARCH
77.092

UNITED STATES. PACIFIC SOUTHWEST FOREST AND RANGE EXPERIMENT STATION. MANAGEMENT SCIENCES STAFF, BERKELEY, CA.
74.064

UNITED STATES. PRESIDENT'S COMMISSION ON FEDERAL STATISTICS
71.007

UNITED STATES. SOIL CONSERVATION SERVICE, HYETTSVILLE, MD.
76.091

UNITED STATES. STATISTICAL RESEARCH DIVISION. WASHINGTON, D.C.
75.064 75.063

UNITED STATES. WATER RESOURCES COUNCIL. WASHINGTON, D.C.
76.161

UNIVERSITE LAVAL. FACULTE DE FORESTRE ET DE GEODESIES DEPARTMENT OF PHOTOGRAMMETRY
76.027

UNIVERSITY COLLEGE, LONDON, ENGLAND
78.028

UNIVERSITY OF AKRON
79.187 79.157

UNIVERSITY OF AKRON. LABORATORY FOR CARTOGRAPHIC & SPATIAL ANALYSIS
80.106

AUTHOR INDEX

UNIVERSITY OF ALABAMA
80.082

UNIVERSITY OF ALBERTA. DEPARTMENT OF EXTENSION
75.271 75.270 75.237 75.229 75.217 75.201 75.162 75.146 75.113 75.041

UNIVERSITY OF ALBERTA. DEPARTMENT OF GEOLOGY
75.268

UNIVERSITY OF ALBERTA. FACULTY OF LAW
75.234

UNIVERSITY OF ALBERTA. INSTITUTE OF SEDIMENTARY AND PETROLEUM GEOLOGY, CALGARY, ALTA.
78.090

UNIVERSITY OF ALBERTA, EDMONTON, ALTA.
79.079

UNIVERSITY OF ARKANSAS, FAYETTEVILLE, AR
77.055

UNIVERSITY OF BRISTOL
79.016

UNIVERSITY OF BRITISH COLUMBIA. DEPARTMENT OF GEOLOGY, VANCOUVER, B.C.
75.218

UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, B.C.
79.185 78.143 78.056 72.012

UNIVERSITY OF CALGARY, CALGARY, ALTA.
79.207

UNIVERSITY OF CALIFORNIA
79.117 70.031

UNIVERSITY OF CALIFORNIA AT RIVERSIDE. DEPARTMENT OF GEOGRAPHY
71.056

UNIVERSITY OF CALIFORNIA AT SANTA BARBARA. COMMUNITY AND ORGANIZATION RESEARCH INSTITUTE
77.093 77.092

UNIVERSITY OF CALIFORNIA AT SANTA BARBARA, SANTA BARBARA, CA.
79.199

UNIVERSITY OF CALIFORNIA. CLAREMONT GRADUATE SCHOOL
73.131

UNIVERSITY OF CALIFORNIA. COMPUTER SCIENCE AND APPLIED MATHEMATICS DEPARTMENT
80.013

UNIVERSITY OF CALIFORNIA. GEOGRAPHY DEPARTMENT
78.036

UNIVERSITY OF CALIFORNIA. INSTITUTE OF URBAN AND REGIONAL DEVELOPMENT
73.087

UNIVERSITY OF CALIFORNIA. LAWRENCE BERKELEY LABORATORY
79.029 77.249 76.176 75.116 75.014 74.068

UNIVERSITY OF CALIFORNIA. LAWRENCE LIVERMORE LABORATORY
75.116

UNIVERSITY OF CALIFORNIA. REMOTE SENSING UNIT, SANTA BARBARA
78.142

UNIVERSITY OF CALIFORNIA. SCHOOL OF ARCHITECTURE AND URBAN PLANNING
75.028

UNIVERSITY OF CINCINNATI. COLLEGE OF LAW
79.043 76.051

UNIVERSITY OF CINCINNATI, OH.
77.059

UNIVERSITY OF DETROIT. DEPARTMENT OF MATHEMATICS
75.221

UNIVERSITY OF DURHAM. DEPARTMENT OF GEOGRAPHY, UNITED KINGDOM
80.089

UNIVERSITY OF EAST ANGLIA. SCHOOL OF COMPUTING STUDIES AND ACCOUNTANCY
79.030

UNIVERSITY OF EDINBURGH
79.208 79.040

UNIVERSITY OF EDINBURGH. DEPARTMENT OF GEOGRAPHY
75.062

UNIVERSITY OF FREIBURG
79.168

UNIVERSITY OF GEORGIA. DEPARTMENT OF GEOGRAPHY, ATHENS, GA.
75.167

UNIVERSITY OF GEORGIA, ATHENS, GA.
79.050

UNIVERSITY OF GUELPH
80.025

AUTHOR INDEX

UNIVERSITY OF GUELPH. COLLEGE OF SOCIAL SCIENCES
76.002

UNIVERSITY OF GUELPH. DEPARTMENT OF COMPUTING SCIENCE
80.067 78.104

UNIVERSITY OF GUELPH. SCHOOL OF ENGINEERING
80.111 80.105 80.039 80.027 80.026 78.039
75.060

UNIVERSITY OF HAIFA. DEPARTMENT OF GEOGRAPHY, HAIFA, ISRAEL
80.060

UNIVERSITY OF HANOVER. DEPARTMENT OF TOPOGRAPHY AND CARTOGRAPHY
79.124

UNIVERSITY OF ILLINOIS AT URBANA - CHAMPAIGN CENTER FOR ADVANCED COMPUTATION, URBANA, IL.
72.110

UNIVERSITY OF INNSBRUCK
79.146

UNIVERSITY OF IOWA. DEPARTMENT OF GEOGRAPHY
77.098 77.090

UNIVERSITY OF IOWA. HEALTH SERVICES RESEARCH CENTER
77.165

UNIVERSITY OF IOWA. INSTITUTE OF URBAN AND REGIONAL RESEARCH
79.062 77.142 77.083 77.082 74.048

UNIVERSITY OF IOWA, CITY, IA.
77.255

UNIVERSITY OF KANSAS
75.278 75.277 75.266 75.226 75.225 75.208
75.186 75.183 75.119 75.094 75.067 75.062
75.001 72.113 72.068 72.029

UNIVERSITY OF KANSAS. DEPARTMENT OF GEOGRAPHY
79.001 72.112 71.077

UNIVERSITY OF MAINE. COLLEGE OF ENGINEERING AND SCIENCE, ORONS
80.023

UNIVERSITY OF MANITOBA. DEPARTMENT OF CITY PLANNING
70.042

UNIVERSITY OF MICHIGAN. DEPARTMENT OF GEOGRAPHY. ANN ARBOR, MI.
75.153 70.050

UNIVERSITY OF MINNESOTA
71.016

UNIVERSITY OF MINNESOTA. CENTER FOR URBAN AND REGIONAL AFFAIRS
77.066

UNIVERSITY OF MINNESOTA. DEPARTMENT OF GEOGRAPHY
75.119 71.040

UNIVERSITY OF MISSOURI. ROLLA, MO.
75.205

UNIVERSITY OF MISSOURI. ST. LOUIS, MO.
75.155

UNIVERSITY OF NEBRASKA. DEPARTMENT OF COMPUTER SCIENCE
80.081

UNIVERSITY OF NEBRASKA, LINCOLN
79.156 79.155

UNIVERSITY OF NEW BRUNSWICK
79.137

UNIVERSITY OF NEW BRUNSWICK. DEPARTMENT OF ECONOMICS
71.046

UNIVERSITY OF NEW BRUNSWICK. DEPARTMENT OF SURVEYING AND ENGINEERING
80.050 78.166 78.111 78.076 78.059 77.049
76.162 76.079

UNIVERSITY OF NEW BRUNSWICK. LAND RESOURCES INFORMATION LABORATORY
80.076 80.075

UNIVERSITY OF NEW ORLEANS
79.216

UNIVERSITY OF NEW ORLEANS. DEPARTMENT OF POLITICAL SCIENCE
80.112

UNIVERSITY OF NORTH CAROLINA
79.019 79.018

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL. INSTITUTE OF RESEARCH IN SOCIAL SCIENCE
80.077

UNIVERSITY OF NOTTINGHAM, U.K.
76.101

UNIVERSITY OF OKLAHOMA. SCHOOL OF CIVIL ENGINEERING AND DEPARTMENT OF GEOGRAPHY, NORMAN, O.K.
75.018

AUTHOR INDEX

UNIVERSITY OF OTTAWA. DEPARTMENT OF GEOGRAPHY AND REGIONAL PLANNING
78.048 77.251 77.215 77.198 77.191 77.188 77.153 77.145 77.091 77.012

UNIVERSITY OF OTTAWA, OTTAWA, ONT.
79.060

UNIVERSITY OF PITTSBURGH. SCHOOL OF ENGINEERING
72.044

UNIVERSITY OF PITTSBURGH, PA.
77.167

UNIVERSITY OF SASKATCHEWAN. DEPARTMENT OF ELECTRICAL ENGINEERING, SASKATOON, SASK.
79.025 79.024 79.022 77.027 75.036 72.019 72.017 72.016

UNIVERSITY OF SASKATCHEWAN, SASKATOON
70.008

UNIVERSITY OF SOUTH CAROLINA
79.049 79.048

UNIVERSITY OF SOUTH CAROLINA. SOCIAL AND BEHAVIORAL SCIENCES LAB AND DEPARTMENT OF GEOGRAPHY
80.029

UNIVERSITY OF SOUTH CAROLINA, COLUMBIA
79.047 76.138

UNIVERSITY OF SOUTHERN CALIFORNIA
82.031

UNIVERSITY OF SOUTHERN CALIFORNIA. SOCIAL SCIENCE RESEARCH INSTITUTE, ARLINGTON, VA.
75.085

UNIVERSITY OF STOCKHOLM, SWEDEN
77.119

UNIVERSITY OF SUSSEX. SCIENCE POLICY RESEARCH UNIT, U.K.
79.077

UNIVERSITY OF TECHNOLOGY. DEPARTMENT OF GEODESY, DELFT
75.200

UNIVERSITY OF TENNESSEE. DEPARTMENT OF GEOGRAPHY
80.019

UNIVERSITY OF TENNESSEE, GRADUATE SCHOOL OF PLANNING, GAITHERSBURG, MD.
75.132

UNIVERSITY OF TOKYO. INSTITUTE OF INDUSTRIAL SCIENCE, TOKYO, JAPAN
78.121 78.120

UNIVERSITY OF VIRGINIA. DEPARTMENT OF APPLIED MATHEMATICS AND COMPUTER SCIENCE
75.186

UNIVERSITY OF WASHINGTON. DEPARTMENT OF CIVIL ENGINEERING, SEATTLE, WA.
78.167

UNIVERSITY OF WASHINGTON. URBAN DATA CENTER, SEATTLE, WA.
74.011

UNIVERSITY OF WASHINGTON. URBAN SYSTEMS RESEARCH CENTER, SEATTLE, WA.
75.019

UNIVERSITY OF WATERLOO. DEPARTMENT OF GEOGRAPHY, WATERLOO, ONT.
72.094

UNIVERSITY OF WATERLOO. WATERLOO RESEARCH INSTITUTE
76.096

UNIVERSITY OF WESTERN ONTARIO. DEPARTMENT OF GEOGRAPHY
77.108

UNIVERSITY OF WESTERN ONTARIO. DEPARTMENT OF GEOLOGY
75.231

UNIVERSITY OF WESTERN ONTARIO, LONDON, ONT.
79.135

UNIVERSITY OF WISCONSIN AT MADISON. ENVIRONMENTAL MONITORING AND DATA ACQUISITION GROUPS
77.052

UNIVERSITY OF WISCONSIN. CARTOGRAPHIC LABORATORY
77.121 77.015 75.164

UNIVERSITY OF WISCONSIN. DEPARTMENT OF GEOGRAPHY
80.080 77.017 76.109 74.084

UNIVERSITY OF WISCONSIN. DEPARTMENT OF SOILS SCIENCE
75.092

UNIVERSITY OF WISCONSIN. INSTITUTE FOR ENVIRONMENTAL STUDIES
79.070 77.162 77.035 72.063

AUTHOR INDEX

UNIVERSITY OF WISCONSIN, MADISON, WI.
79.158 73.078

URBAN DATA PROCESSING INCORPORATED, CAMBRIDGE, MA.
73.135 72.006 71.021 71.020

URBAN INFORMATION SYSTEMS INTER-AGENCY COMMITTEE (USAC)
73.131

URBAN TRANSPORTATION SYSTEMS ASSOCIATES, INCORPORATED, NEWTON, MA.
75.065

URBANPROBE ASSOCIATES, LTD.
79.007

URICK, MARY A.
76.046

USA ETL, FORT BELVOIR, VA.
80.014

USDA FOREST SERVICE. ROCKY MOUNTAIN FOREST AND RANGE EXPERIMENT STATION, TEMPE, AZ.
79.166

USGS TOPOGRAPHIC DIVISION DIGITAL APPLICATIONS TEAM
77.227

USHER, W.D.
79.204

UTAH UNIVERSITY. BUREAU OF ECONOMICS AND BUSINESS RESEARCH. SALT LAKE CITY, UT.
71.035

UTAH UNIVERSITY. CENTER FOR REMOTE SENSING AND CARTOGRAPHY
82.014 81.074

UTANO, JACK J.
80.106 79.027 78.019 77.028

UTILITY DATA CORPORATION, HOUSTON, TX.
71.018

UYL, DON DEN
75.255

VACHON, R.I.
74.045

VALFER, ERNST
74.064

VALLERY, DOUGLAS
78.168

VAN DE VELDE, LOUIS R.
75.032

VAN DEMARK, PETER H.
78.169

VAN DEN DRIESSCHE, R.
72.018

VAN DRIEL, J. NICHOLAS
77.229 75.256

VAN DYKE, L.H.
70.046

VAN EST, JAN
83.225 82.277 82.017 82.016 81.093

VAN RAVENSWAAY
81.124

VAN ROSSEL, J.
70.031

VAN SAMBEEK, JACK
82.197

VAN TWEMBEKE, U.L.W.
82.237

VAN WIE, P.H.
79.026 78.018 77.230

VAN WIJK, M.C.
83.170

VAN ZUYLEN, LUKE, ED.
75.267 75.232 75.230 75.200 75.187 75.147 75.138 75.133 75.100 75.052 75.038 75.010 75.001

VANG, ALFRED
79.048

VASMUT, A.S.
77.231

VERBISKY, S.
71.022

VERKE, THEODOR B.
77.042

VERMONT INSTITUTE OF COMMUNITY INVOLVEMENT
76.112

VERNON GRAPHICS INC. ELMSFORD, N.Y.
80.086

VICKERS, R.S.
83.056

AUTHOR INDEX

VILLASANA, ING. J. ALBERTO, ED.
74.063 74.058 74.016 74.015 74.014

VINCENT, C.L.
75.005

VINCENT, R.K.
74.044

VINKEN, R.
75.257

VIRGINIA POLYTECHNICAL INSTITUTE & STATE UNIVERSITY, BLACKSBURG
79.116

VIRKLER, GARY W.
76.016 74.006

VLACHOS, D.
83.002

VOCAR, J.M.
77.001

VOELKER, A.H.
76.163 75.259 75.258 72.069

VOGT, W.G.
77.167

VON GRUENIGEN, SUSAN
83.194

VON WODTKE, MARK
74.076

VONUSA, RICHARD
77.019

VORHIES, JAMES H.
75.260

VOSS, JERROLD R.
70.029

VTN CORPORATION
79.009

VUILL, ROBERT S.
72.085

VULLUCCI, M.J.,ED.
72.049

W.E. GATES AND ASSOCIATES INC.
80.073 78.080 78.071 77.112

WADDELL, B.H.
74.078

WADSWORTH, WILLIAM M.
80.107 79.205

WAGAR, J. ALAN
76.164

WAGE, SHARAD G.
79.155

WAGLE, SHARAD
79.156

WAHL, BERNARDO J.
75.261

WAI-SEE, MOY
77.108

WALDEN, A.R.
72.111

WALESH, STUART G.
77.232

WALKER, P.
81.164

WALKO, VLAD
79.022

WALLER, R.A.
77.233

WALLMER, H.
70.055

WALSKI, THOMAS M.
79.206

WALTERS, GEORGE
79.048

WALTERS, RONALD L.
80.108

WANCHOO, LALIT
82.231

WANG, C.
70.009

WARD, ALBERT W.
76.109

WARD, FREDERICK Y.
75.262

WARD, J. LEROY
76.165

WARE, KENNETH, ED.
75.255 75.212 75.171 75.154 75.140 75.072

WARREN, JOHN
81.204

WASHAM, J.P.
74.127

WASHINGTON STATE UNIVERSITY. PULLMAN
77.099

WASHINGTON UNIVERSITY
82.011

WASHINGTON UNIVERSITY. URBAN TRANSPORTATION PROGRAM
77.054

WASHINGTON UNIVERSITY, URBAN DATA CENTER
71.013

WASILENKO, M.
81.199 81.198 81.197

WASTESSON, OLOF, ED.
73.132

WATERS, N.M.
81.157

WATERS, NIGEL
79.207

WATESSON, OLOF
77.234

WATKIN, J.E., ED.
77.214 77.011

WATLINGONT, M.L.
74.008

WATSON, K.
82.066

WATSON, RICHARD A.
73.133

WATTLES, GORDON H.
73.134

WAUGH, THOMAS C.
81.005 79.208 76.168 76.167 76.166

WAYNE STATE UNIVERSITY. DEPARTMENT OF POLITICAL SCIENCE, DETROIT, MI.
77.079

WEATHERHEAD, E.
70.056

WEAVER, FREDERICK M.
77.236 77.235 73.137 73.136 73.135

WEAVER, RODGER
71.035

WEBB, A.
82.098

WEBB, R. PAT
81.153 79.209

WEBER, WIGAND
79.210

WEBSTER, ROYAL
82.022

WECKSUNG, M.J.
78.170

WEEDEN, H.A.
73.092

WEEKS, D.C.
70.057

WEHDE, MICHAEL E.
79.211

WEHLING, ROGER A.
74.128

WEI, TIM
83.152

WEICHERT, PHIL
77.200

WEIN, MARCELI
83.135

WEINGARTEN, NICHOLAS
82.079

WEINSTOCK, D.
74.129

WEINTRAUB, A.
82.097

WEISS, ALFRED
77.237

WEISS, C.C.
77.238

WELBY, CHARLES W.
82.073

WELCH, D.M., ED.
79.212

WELDON, JOHN I.
70.058

WELIN, R.A.
80.109 78.171

AUTHOR INDEX

WELLAR, BARRY S., ED.
77.241 77.236 77.211 77.200 77.199 77.192
77.176 77.165 77.159 77.158 77.144 77.139
77.130 77.129 77.126 77.111 77.102 77.098
77.096 77.090 77.083 77.082 77.076 77.068
77.066 77.032 75.263 73.138 72.113 72.112
72.095 72.092 72.068 72.029 71.077

WELLS, M.
82.284

WELSCHEID, H.
75.111

WENNER, P.
82.283

WERNER, PAMELA A.
76.169 74.133 74.132 74.131 74.130 72.114

WESCOTT, THOMAS F.
81.009

WESELAKE, SUE ANNE (ED.)
81.127

WEST VIRIGINA UNIVERSITY, MORGANTOWN, WV
78.067

WEST, DARRELL C.
74.106

WEST, TERRY R.
82.084

WESTERLUND, F.V.
82.011

WESTERN WASHINGTON UNIVERSITY
80.100

WESTIN, F.
82.105

WETHERBY, K.G.
77.010

WHEAT, B.M.
82.113

WHERRY, DAVID B.
79.134

WHITE, DENIS
79.214 79.213 78.172 77.239

WHITE, JACK
76.108

WHITE, K. PRESTON, JR.
83.157

WHITE, L. FORREST
80.110

WHITE, MARVIN S. JR.
79.215 79.101 78.173 77.241 77.240 75.264

WHITEHEAD, VICTOR S.
82.173

WHITEHURST, CHARLES A.
75.265

WHITELEY, H.R.
80.111

WHITEMORE, D.R.E.
74.134

WHITTEKER, J.H.
82.134

WHITTEN, E.H. TIMOTHY
75.266 74.135

WIDMER, K.
74.136

WIESEL, J.
77.243

WIKSTROM, A.
75.029

WILCOTT, CURTIS, ET AL.
77.192

WILCOX, LUMAN E.
74.137

WILDGEN, JOHN K.
80.112 79.216

WILEY, R.A.
78.170

WILFORD-BRICKWOOD, JUDITH M., ED.
75.267 75.232 75.230 75.200 75.187 75.147
75.138 75.133 75.100 75.052 75.038 75.010
75.001

WILKIE, JOHN B.
71.078

WILKINSON, L.A.
75.260

WILLAMS, OWEN W.
76.171

WILLIAM H. SMITH AND ASSOCIATES, INC., CHAMPAIGN, IL.
78.144

WILLIAMS, ANTHONY V.
78.174

WILLIAMS, CHARLES M.
77.244

WILLIAMS, DONALD L.
74.102

WILLIAMS, FORREST B.
77.245

WILLIAMS, G. DANIEL
78.090 75.268 74.043 72.116 72.115

WILLIAMS, J.
74.022

WILLIAMS, JOHN L.
71.078 70.059

WILLIAMS, JOHN R.
76.170

WILLIAMS, LANCE
83.054

WILLIAMS, M.M.
75.108

WILLIAMS, ROBERT LEE
79.217

WILLIAMS, V.
72.062

WILLIS, JEFFREY
72.117

WILLIS, WILLIS F.
71.079

WILLS, ROBERT G.
77.246

WILSON, B.G.
74.129

WILSON, C.
82.060

WILSON, C.L.
81.186

WILSON, D.L.
76.172 76.106

WILSON, JOHN
81.156 79.218

WILSON, JOHN M.
77.208

WILSON, JOHN P.
79.219

WILSON, PAUL
83.108

WILSON, PAUL M.
82.185 81.136 81.130 80.113 79.220

WILSON, S.
74.138

WILSON, THOMAS M.
82.073

WILSON, VANCE
75.188

WILTSHIRE, S.E.
83.114

WINGATE, FRANK B.
75.269

WINIGER, M.
72.093

WINTER, DONALD C., ET AL.
77.247

WISCONSIN BUREAU OF STATE PLANNING
70.021

WISCONSIN POWER AND LIGHT COMPANY, MADISON
79.193

WISCONSIN UNIVERSITY-MADISON. INSTITUTE FOR ENVIRONMENTAL STUDIES
72.084

WISMATH, S.K.
81.058

WITIUK, SID W.
81.031 81.030 81.005 78.175 77.251 76.174 76.173

WITTICK, R.I.
76.175

WITTIG, G.
78.176

WOHLMUT, PETER G.
76.034 76.026 76.022

WOLDENBERG, MICHAEL
73.139

WOLL, A.M.
73.140

AUTHOR INDEX

WOLLE, F.R.
84.001

WOLLEY-DOD, W.A.
75.271 75.270

WONG, A.S.
75.082

WONG, C.K.
76.009

WONG, ED.
80.114

WONG, KAM W.
73.141

WONG, STANTON H.
75.272

WOOD, ALEX J.
83.199 81.194

WOOD, NAT
77.248

WOOD, PETER M.
79.221 78.178 78.177 78.050 77.249 76.176
75.273 74.139

WOODCOCK, CURTIS E.
83.053

WOODFORD, P.A.
78.082

WOODS GORDON MANAGEMENT CONSULTANTS
81.117 78.179

WOODS HOLE OCEANOGRAPHIC INSTITUTION
83.036

WOODS, HARRY K.
74.009

WOODSFORD, P.A.
75.230

WORLD DATA CENTER, OBLAST, U.S.S.R.
77.114

WOZNY, MICHAEL J.
81.191

WRAY, JAMES R.
82.225 74.054 73.004

WREN, A.E.
75.274

WRIGHT, G.L.
77.167

WRIGHT, JEFF
83.144

WRIGHT, R.
82.224

WU
82.255

WUKELIC, G.E.
83.067 82.258 82.257 82.221 81.172

WUNDERLICH, C.
83.229

WUNDERLICH, GENE
78.180 77.250 76.177 75.276 75.275 73.142
73.009

WYANDOTTE COUNTY BASE MAPPING PROGRAM, KANSAS CITY, KS.
77.076 75.071

WYNNE-EDWARDS, H.R.
78.143 75.163

WYSONG, R.
74.045

WYTOCK, DAVID M.
76.178

YACOUMELOS, NICK G.
73.141

YALE UNIVERSITY. SCHOOL OF FORESTRY AND ENVIRONMENTAL STUDIES
80.092 80.010

YALE UNIVERSITY, NEW HAVEN, CT.
79.217 79.201

YAN, JOEL
83.222 83.138 77.251

YAO, S.S.
81.082

YARAMANOGLU, MELIH
82.231

YARDAS, DAVID ET AL.
82.155

YATES, DONALD F.
82.209

YOELI, PINHAS
83.109 78.181 77.252 77.242 75.278 75.277
72.018

YORK UNIVERSITY. DEPARTMENT OF SOCIOLOGY
77.097

YOUNG, G.J.
78.182 77.253

YOUNG, GARY M.
82.032

YOUNG, MARY E.H.
78.185 78.184 78.183

YOUNG, WILLIAM H.
78.186

YOUNGER, K.
72.096

YOUNGMANN, CARL E.
80.115 79.199 74.140 73.143

YU, T.C.
76.031

ZAFFT, W.A.
75.209

ZARESKI, GORDON K.
79.222

ZARZYCKI, J.M.
78.187 75.279

ZASTROW, JOSEPH
83.118

ZECH, R.G.
79.021

ZERNIKE, FRITS
79.021

ZIED, AL
83.032

ZIEGENFUD, DR. ROBERT C.
80.116

ZIEGLER, ARTHUR L.
76.156

ZIEMANN, HARTMUT
79.223 77.254 76.181 76.180 76.179 75.280

ZIMMERMAN, MILVA
82.196

ZIMMERMAN, P.
83.052

ZIMMERMANN, R.H.
77.255 77.081

ZINKL, R.J.
82.055

ZOBRIST, ALBERT L.
83.041 82.324 81.170 79.028 77.033 76.182

ZODROW, E.
75.281

ZORASTER, STEVEN
82.029

ZOUZOULAS, GARY
83.152 82.197

ZUDINA, A.B.
76.183

ZURICH UNIVERSITY. DEPARTMENT OF GEOGRAPHY, SWITZERLAND
75.110

ZWART, P.
82.002

ZYCOR, INC.
82.029

TITLE INDEX

TITLE INDEX

AAPG OIL AND GAS-FIELD DATA BANK PROJECT, UNITED STATES AND CANADA
76.122

AARHUS UNIVERSITY SYSTEM 2
75.190

ABOUT CARTOGRAPHIC CONTOURING WITH COMPUTERS
83.109

ACCESSIBILITY MEASUREMENT AND USE IN LAND USE PLANNING
76.057

ACCESSING URBAN INFORMATION BY GEOCODING: PRESENT CALGARY APPLICATIONS
75.113

ACCURACY OF REMOTELY SENSED DATA: SAMPLING AND ANALYSIS PROCEDURES
82.039

ACCURACY/QUALITY CONTROL OF DIGITAL DATA IN THE DIGITAL TOPOGRAPHIC INFORMATION BANK
76.049

ADAPT - A SPATIAL DATA STRUCTURE FOR USE WITH PLANNING AND DESIGN MODELS
77.154

ADAPT SEWER DESIGN GEOGRAPHIC INFORMATION SYSTEM
78.071

ADAPT: THE USE OF COMPLEX MODELS WITH A GEOGRAPHIC DATA BASE
80.073

THE ADJUSTMENT OF SINGLE CONTROL TRAVERSES
82.236

ADLIB: A MULTI-FUNCTION SITE ADDRESS LIBRARY
82.200

ADMATCH ADVENTURES
76.052 74.146

ADMINISTRATION OF ZONING AND BUILDING CODES
76.020

ADMINISTRATIVE PROBLEMS IN THE IMPLEMENTATION OF THE FISCAL DATA PORTION OF A MULTIPURPOSE LAND DATA SYSTEM
79.119

ADMINS CENSUS EXAMPLE: ADDRESS MATCHING
73.079

ADMINS DEMONSTRATION: MUNICIPAL PLANNING INFORMATION
73.080

ADMINS EXAMPLE: HIERARCHICAL CLASSIFICATION SCHEMES
73.081

ADVANCED CARTOGRAPHIC DATA DIGITIZING SYSTEM
82.038

ADVANCED EDIT SYSTEM
83.009

ADVANCED MAPPING SYSTEM FOR THE SOIL CONSERVATION SERVICE
75.127

ADVANCED TECHNIQUES FOR INTEGRATING GEOGRAPHIC DATA FOR ENERGY RESEARCH AND TECHNOLOGY
82.257

ADVANCED TYPE PLACEMENT AND GEONAMES DATABASE: COMPREHENSIVE COORDINATION PLAN
83.032

ADVANCES IN COMPUTER-AIDED CARTOGRAPHY: A NORWEGIAN RESEARCH PROGRAM ON MAPPING AND HANDLING OF SPATIAL DATA
81.026

ADVANCES IN DIGITAL IMAGE DISPLAY AND SIMULATION FROM DIGITAL TERRAIN DATA BASES
78.060

ADVANCES IN GEOGRAPHIC INFORMATION SYSTEMS
83.188

ADVANCES IN INFORMATION SYSTEMS AND SERVICES FOR THE FORESTRY COMMUNITY
78.053

ADVANTAGES OF USING A GENERALIZED SYSTEM TO MANAGE GEOLOGICAL DATA
75.268

AERIAL PHOTOGRAPHY AND COMPUTER GRAPHICS SPEED EXPLORATION
79.224

AERIAL PHOTOGRAPHY AND IMAGE INTERPRETATION FOR RESOURCE MANAGEMENT
81.126

TITLE INDEX

AGRESTE PROGRAMME. PART 2: FRENCH TEST SITES. PROGRESS REPORT JUL-DEC 76
76.069

AGRICULTURAL LAND COVER MAPPING IN THE CONTEXT OF A GEOGRAPHICALLY REFERENCED DIGITAL INFORMATION SYSTEM
82.109

AGRISTARS: RENEWABLE RESOURCES INVENTORY. LAND INFORMATION SUPPORT SYSTEM IMPLEMENTATION PLAN AND SCHEDULE
81.082

AIDED-TRACK CURSOR FOR IMPROVED DIGITIZING ACCURACY
78.086

AIR PHOTO INTERPRETATION FOR TERRAIN ANALYSIS: GUIDE BOOK TO J.D. MOLLARD'S LANDFORMS AND SURFACE MATERIALS OF CANADA
82.163

AIRBORNE INFRARED FOREST FIRE SURVEILLANCE - A CHRONOLOGY OF USDA FOREST SERVICE RESEARCH AND DEVELOPMENT
81.204

ALBERTA - PLANNING - REGIONAL PLANNING SYSTEM STUDY
82.149

ALBERTA LAND INFORMATION SYSTEMS: CONCEPT TO REALITY
83.162

ALBERTA LAND REGISTRY, EVALUATION AND PLANNING STUDY
82.310

ALBERTA RANGE LAND ASSESSMENT USING REMOTELY SENSED DATA
83.231

ALBERTA REMOTE SENSING CENTER'S ROLE IN EDUCATION
80.011

ALBERTA URBAN ASSESSMENT - DATA BANK
72.002

AN ALGORITHM FOR CONVERTING RASTERS TO QUAD-TREES
81.168

AN ALGORITHM FOR GENERATING ANTI-ALIASED POLYGONS FOR 3-D APPLICATIONS
83.135

AN ALGORITHM TO CALCULATE PROPORTIONAL AREA TRANSFORMATION FACTORS FOR DIGITAL GEOGRAPHIC DATABASES
83.224

ALGORITHMIC SELECTION OF THE BEST METHOD FOR COMPRESSING MAP DATA STRINGS.
71.002

ALGORITHMS FOR DENSE DIGITAL TERRAIN MODELS
80.025 78.039

ALGORITHMS FOR DIGITAL TERRAIN DATA MODELING
82.029

ALGORITHMS FOR GRAPHICS AND IMAGE PROCESSING
82.254

ALGORITHMS FOR THE REDUCTION OF THE NUMBER OF POINTS REQUIRED TO REPRESENT A DIGITIZED LINE OR ITS CARICATURE
73.051

ALTERNATIVE APPROACHES FOR APPLYING GIS TECHNOLOGY
80.033

ALTERNATIVE FORMS OF SPATIAL REFERENCING: AN EVALUATION
74.067

AMERICAN CONGRESS ON SURVEYING AND MAPPING. TECHNICAL PAPERS FROM THE 1971 ASP-ACSM FALL CONVENTION. SAN FRANCISCO, CA. SEPT. 7-11, 1971
71.080

AMERICAN GRAPH FLEETING, A COMPUTER-HOLOGRAPH MAP ANIMATION OF UNITED STATES POPULATION GROWTH 1790-1970
79.066

AMOCO GRAPHICS SYSTEM
79.065

ANALOG GRAPHIC PROCESSING FOR 3-D TERRAIN DISPLAYS, PROFILES, AND ELEVATION LAYER TINTS. RESEARCH NOTE MAR.-APR. 75
75.158

ANALYSIS AND PREPARATION OF A DIGITAL TERRAIN DATA BASE FOR FLIGHT SIMULATOR USE
81.083

TITLE INDEX

ANALYSIS AND SIMULATION OF DISCRETE DIGITAL IMAGE MATCHING
81.034

ANALYSIS APPLICATION OF LAND-USE DATA
75.258

AN ANALYSIS OF A RELAXATION SCHEME TO IMPROVE TERRAIN ELEVATION DATA
82.030

ANALYSIS OF ALTERNATIVES FOR AN OKLAHOMA LAND USE INFORMATION SYSTEM
73.133

ANALYSIS OF COMPUTER SUPPORT SYSTEMS FOR MULTI-FUNCTIONAL PLANNING. DETAILED ANALYSES AND SUMMARY REPORT
76.129

ANALYSIS OF COMPUTER SUPPORT SYSTEMS FOR MULTI-FUNCTIONAL PLANNING. FINAL REPORTS 1 AND 2
74.064

ANALYSIS OF COMPUTER SUPPORT SYSTEMS FOR MULTIFUNCTIONAL PLANNING
74.125

ANALYSIS OF DISTRIBUTION OF MINERAL OCCURRENCES IN BRITISH COLUMBIA
78.143

ANALYSIS OF ECOLOGICAL DATA FOR PARK PLANNING
82.211

THE ANALYSIS OF LANDSAT IMAGERY USING AN EXPERT SYSTEM: FORESTRY APPLICATIONS
83.120

ANALYSIS OF LANDSAT-4 THEMATIC MAPPER DATA FOR THE DISCRIMINATION OF URBAN FEATURES
83.156

ANALYSIS OF SPRUCE BUDWORM DEFOLIATION: A GRAPHICS APPLICATION
80.068

ANALYSIS OF THE PROPOSED COMPUTERIZED PROGRAMME FOR ASSESSMENT AND TAXATION
73.003

ANALYSIS: LAND USE PLANNING CAN BENEFIT FROM WIDER COMPUTER USE
79.007

ANALYTIC DELINEATION OF THIESSEN POLYGONS
73.114

ANALYTICAL CARTOGRAPHY
76.153

ANALYTICAL MAP FOR SCHOOL LOCATIONAL PLANNING
75.011

ANALYTICAL PLOTTER FOR FACILITY MANAGEMENT SYSTEMS DATA ACQUISITION
83.124

THE ANALYTICAL STEREOPLOTTER - THE DATA GATHERER FOR COMPUTER ASSISTED CARTOGRAPHY AND INTEGRATED RESOURCE MAPPING
82.223

ANALYZING AND MAPPING REGIONAL LAND USE TRENDS BY COMBINING LANDSAT AND TOPOGRAPHIC DATA
81.172

ANGULAR LIMITS ON SCANNER IMAGERY FOR VEGETATIVE ASSESSMENT
82.173

AOIPS WATER RESOURCES DATA MANAGEMENT SYSTEM
77.230

AOIPS WATER RESOURCES DATA MANAGEMENT SYSTEM DESCRIPTION
76.118

APL BASED SYSTEM FOR TEACHING COMPUTER CARTOGRAPHY
78.036

APPLICABILITY OF DIGITAL TERRAIN MODELS TO HYDROLOGICAL SIMULATION
80.111

APPLICATION OF A COMMERCIAL MAPPING/DATA MANAGEMENT SYSTEM TO FOREST LAND MANAGEMENT IN MAINE
83.117

APPLICATION OF A DATA BANK WITH COMPUTER GRAPHIC CAPABILITIES IN REGIONAL ENVIRONMENTAL PLANNING
75.059

APPLICATION OF AERIAL PHOTOGRAPHIC AND COMPUTER ANALYSIS TO THE USLE FOR AREAWIDE EROSION STUDIES
82.074

APPLICATION OF COMPUTER ASSISTED CARTOGRAPHIC METHODS TO ROAD MAPPING
77.121

APPLICATION OF COMPUTER MAPPING IN DEPICTING SPATIAL AND TEMPORAL COMPONENTS OF CANCER MORTALITY
80.116

TITLE INDEX

APPLICATION OF COMPUTER MODELING FOR THE INVESTIGATION OF GROUND-WATER CONTAMINATION
81.047

APPLICATION OF COMPUTER TECHNOLOGY IN PROCESSING OF CADASTRAL SURVEYING AND MAPPING DATA
80.030

APPLICATION OF COMPUTERS TO CARTOGRAPHIC PROCEDURES IN CANSIS
83.181

THE APPLICATION OF CONTOUR DATA FOR GENERATING HIGH FIDELITY GRID DIGITAL ELEVATION MODELS
82.171

APPLICATION OF DASCH SYSTEM TO GEOLOGICAL FIELD DATA AND DOCUMENTATION FILES OF THE GEOLOGICAL SURVEY, FEDERAL REPUBLIC OF GERMANY
75.257

APPLICATION OF DIGITAL COMPUTERS TO FOREST INVENTORY IN NEWFOUNDLAND
75.122

APPLICATION OF ECONOMETRIC METHODS TO THE APPRAISAL PROCESS
71.033

APPLICATION OF GENERALIZED CHAIN CODING SCHEME TO MAP DATA PROCESSING
78.063

APPLICATION OF GIMMS AS A PLANNING TOOL
79.040

APPLICATION OF HIERARCHICAL DATA STRUCTURES TO GEOGRAPHICAL INFORMATION SYSTEMS
83.007 82.019

APPLICATION OF LINE AND CHARACTER RECOGNITION IN CARTOGRAPHY
77.209

APPLICATION OF MAPS TO THE SALINAS-MONTEREY URBAN STUDY. FINAL REPORT
79.206

APPLICATION OF MULTIVARIATE ANALYSIS TO REGIONAL SURVEY
75.043

APPLICATION OF NEW YORK CITY'S GEOGRAPHIC BASE FILE
71.004

APPLICATION OF ODYSSEY TO DIME FILE MAPPING
79.150

APPLICATION OF OPTICAL CHARACTER RECOGNITION TECHNIQUES FOR THE DIGITIZATION OF ALPHA-NUMERICS AT THE DEFENSE MAPPING AGENCY (DMA)-PART 1
78.072

THE APPLICATION OF PRINCIPAL COMPONENTS ANALYSIS TO SEISMIC DATA SETS
81.065

APPLICATION OF REMOTE SENSING TECHNIQUE TO INTER AND INTRA URBAN ANALYSIS. FINAL REPORT
72.051

APPLICATION OF SHAPE-PRESERVING SPLINE INTERPOLATION TO INTERACTIVE EDITING OF PHOTOGRAMMETRIC DATA
78.045

APPLICATION OF SPATIAL ANALYSIS TECHNIQUES TO REMOTELY SENSED IMAGES AND ANCILLARY GEOCODED DATA
80.046

THE APPLICATION OF STRUCTURED SYSTEMS ANALYSIS TO THE DEVELOPMENT OF AN AUTOMATED MAPPING SYSTEM
82.183

APPLICATION OF THE GELO MAPPING SYSTEM IN REGION 6, USFS
75.140

AN APPLICATION OF THE GRAPH THEORY IN THE ADJUSTMENT OF A GEODETIC NETWORK
82.302

AN APPLICATION OF THE HYPERGRAPH-BASED DATA STRUCTURE (HBDS) IN AN AGRICULTURAL SUITABILITY STUDY
81.129

APPLICATION OF THE LUNR INVENTORY SYSTEM FOR WATER RESOURCES PLANNING AND MANAGEMENT IN THE SUSQUEHANNA RIVER BASIN
74.101

APPLICATION OF THE ORRMIS GEOGRAPHICAL DIGITIZING AND INFORMATION SYSTEM USING DATA FROM THE CARETS PROJECT
76.106

APPLICATIONS OF COMPUTER GRAPHICS IN THE TRANSPORTATION - LAND USE FIELD: A REVIEW AND FORECAST FOR THE EIGHTIES
83.207

TITLE INDEX

APPLICATIONS OF DIGITAL DISPLAYS IN PHOTOINTERPRETATION AND DIGITAL MAPPING
80.093

APPLICATIONS OF GEOGRAPHIC INFORMATION PROCESSING. PAPERS PRESENTED AT THE SECOND ANNUAL SYMPOSIUM WORKSHOP OF THE NATIONAL CAPITAL GEOGRAPHIC INFORMATION PROCESSING GROUP
77.077

APPLICATIONS OF LATTICE THEORY TO AUTOMATED CODING AND DECODING
75.064

APPLICATIONS OF LOW COST DENSE DIGITAL TERRAIN MODELS
78.150

APPLICATIONS OF THE ALICE SYSTEM IN CITY AND REGIONAL PLANNING
78.103

APPLYING COMPUTER-DRAWN MAPS OF GEOLOGIC DATA TO ANALYSIS OF MINING PROBLEMS. REPORT OF INVESTIGATIONS: 1976
76.102

APPLYING INTERACTIVE COMPUTER GRAPHICS AND ATTRIBUTE DATA BASE TECHNIQUES TO GBF/DIME MAINTENANCE & CENSUS DATA PROCESSING
83.142

APPLYING LANDSAT DATA IN A GEOGRAPHIC INFORMATION SYSTEM TO DELINEATE PRIME FARMLANDS AND ELEVATE THEIR LOSS TO URBAN EXPANSION
78.088

APPLYING PHOTOGRAMMETRY TO REAL TIME COLLECTION OF DIGITAL IMAGE DATA
81.033

APPROACH FOR DESCRIBING NATURAL SYSTEMS AND FOR ASSESSING NATURAL ENVIRONMENTAL IMPACTS
76.123

APPROACH TO A PICTORIAL INFORMATION MANAGEMENT SYSTEM
82.110

APPROACH TO AUTOMATED CARTOGRAPHY: TOPOGRAPHIC DATA BANKS IN CANADA
75.279

APPROACH TO AUTOMATIC CARTOGRAPHY FOR TOPOGRAPHIC MAPPING IN CANADA
73.067 71.039

APPROXIMATION OF POLYGONAL MAPS BY CELLULAR MAPS
79.155

THE ARC/INFO MAP LIBRARY: A DESIGN FOR A DIGITAL GEOGRAPHIC DATABASE
83.192

THE ARCTIC POLICY REVIEW
82.311

ARCTIC TERRAIN CHARACTERISTICS DATA BANK
74.083

ARIS:ALABAMA RESOURCES INFORMATION SYSTEM
74.045

ARRANGEMENT OF NUMERICAL CADASTRAL DATA IN A MODERN CADASTRE OF LAND HOLDING
75.037

ASPEX PROGRAM SUMMARY DESCRIPTION
79.059

ASSESSING DATA NEEDS AND RELATED CRITERIA: DISCUSSION OF ENVIRONMENTAL DATA
75.259

ASSESSMENT AND EVALUATION OF GEOTECHNICAL RESOURCES IN URBAN OR REGIONAL ENVIRONMENTS
78.070

ASSESSMENT FROM A POLITICAL POINT OF VIEW (FOR A PANEL DISCUSSION ON LAND RECORDS AND RESOURCE INFORMATION SYSTEM WASHINGTON)
79.176

ASSESSMENT MAPPING AND PARCEL IDENTIFICATION SYSTEMS
75.006

ASSESSOR'S FILES AS AN INFORMATION SOURCE FOR PLANNING: PERSPECTIVES FROM THE NATIONAL INFILL STUDY
81.142

ASSESSOR'S PARCEL IDENTIFICATION SYSTEMS
73.007

ASSOCIATIVE ARRAY PROCESSING OF RASTER SCANNED DATA FOR AUTOMATED CARTOGRAPHY 2 (IMPROVED RESOLUTION AND DATA HANDLING). FINAL TECHNICAL REPORT MAY 76-OCT. 77
77.001

TITLE INDEX

AT THE INTERFACE OF CARTOGRAPHY AND COMPUTER GRAPHICS
75.160

ATLAS SUPPLEMENT TO THE 1972 COUNTY AND CITY DATA BOOK
80.100

ATLAS: A GEOGRAPHIC DATA BASE SYSTEM - DATA STRUCTURE AND LANGUAGE DESIGN FOR GEOGRAPHIC INFORMATION
80.103

AUTO CART 1. PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON AUTOMATION IN CARTOGRAPHY, RESTON, VA. DEC. 9-12, 1974.
76.066

AUTO CART 2. PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON COMPUTER-ASSISTED CARTOGRAPHY, SEPT. 21-25, 1975
75.128

AUTO CART 3. PROCEEDINGS OF THE INTERNATIONAL CONFERENCE (SYMPOSIUM) ON COMPUTER-ASSISTED CARTOGRAPHY, SAN FRANCISCO, CA. JAN. 16-20, 1978
79.082

AUTOMATED AGRICULTURAL DOT MAPPING IN YOU CAN'T TAKE A CENSUS WITHOUT GEOGRAPHIC SUPPORT
77.221

AUTOMATED CARTOGRAPHY AT THE U.S. BUREAU OF THE CENSUS
75.040

AUTOMATED CARTOGRAPHY IN FEDERAL MAPPING IN CANADA
73.068

AUTOMATED CARTOGRAPHY IN THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
75.121

AUTOMATED CARTOGRAPHY IN THE SURVEYS AND MAPPING BRANCH. DEPARTMENT OF ENERGY, MINES AND RESOURCES
76.077

AUTOMATED CARTOGRAPHY SUBSYSTEM DEMONSTRATION FOR THE MINISTRY OF NATURAL RESOURCES
76.096

AUTOMATED CARTOGRAPHY SYSTEM RESEARCH AND DEVELOPMENT
83.199

AUTOMATED CARTOGRAPHY. SPECIAL PUBLICATION NO. 1
74.020

AUTOMATED CONTOUR MAPPING USING TRIANGULAR ELEMENT DATA STRUCTURES AND AN INTERPOLANT OVER EACH IRREGULAR TRIANGULAR DOMAIN
77.106

AUTOMATED CREATION OF WEIGHTING AREAS: USE OF GEOCODING IN DISTRIFICATION
72.060

AUTOMATED DATABASE CAPTURE FOR CADD
83.116

AUTOMATED DELINEATION OF GROUND SLOPE
76.019

AUTOMATED DETECTION OF DRAINAGE NETWORKS FROM DIGITAL ELEVATION MODELS
83.111

AUTOMATED EDITING OF DIGITAL GRAPHIC DATA
75.219

AUTOMATED GEO-CODING AND DISPLAY IN MAP FORM OF SURVEY DATA
78.077

AUTOMATED GEOCODING AND DISPLAY IN MAP FORM OF DATA SURVEY
79.088

AUTOMATED GRAPHIC INFORMATION SYSTEMS AND LANDSAT DATA: A SURVEY
79.118

AUTOMATED GULLY DELINEATION USING DIGITAL ELEVATION DATA
83.047

AUTOMATED IMAGE PROCESSING IN FORESTRY
74.112

AUTOMATED INFORMATION DIRECTORY SYSTEMS (AIDS)
81.076

AUTOMATED INFORMATION DIRECTORY SYSTEMS (AIDS): DETERMINE OPTIMUM BUS AND/OR SUBWAY ROUTING FOR RIDERS
83.076

AUTOMATED LAND USE INFORMATION SYSTEM - NEEDS, POSSIBILITIES, RECOMMENDATIONS AND PROBLEMS
77.255

TITLE INDEX

AUTOMATED LAND USE INFORMATION SYSTEM: NEEDS, POSSIBILITIES, RECOMMENDATIONS PROBLEMS
77.081

AUTOMATED MAP DISPLAY ALIGNMENT
82.023

AUTOMATED MAPPING AND UTILITY SYSTEM
81.054

AUTOMATED MAPPING IN MINNEAPOLIS AND HENNEPIN COUNTY MINNESOTA
81.135

AUTOMATED MAPPING OF SOUTH CAROLINA
79.047

AUTOMATED MAPPING PROCEDURES AT THE U.S. FOREST SERVICE GEOMETRONICS SERVICE CENTER
78.031

AUTOMATED METHODOLOGY FOR LINEAR GENERALIZATION IN THEMATIC CARTOGRAPHY
73.024

AUTOMATED PLOTTING THROUGH ANALYTICAL PROCESSING OF DIGITAL IMAGES EXTRACTED FROM PHOTOGRAPHS
78.051

AUTOMATED PROCEDURE FOR SLOPE MAP CONSTRUCTION. VOLUME DESCRIPTION AND INSTRUCTIONS FOR USE OF THE AUTOMATED PROCEDURE. FINAL REPORT 1 JUNE 75 - JUNE 76
77.212

AUTOMATED PRODUCTION-1:50,000 SCALE TOPOGRAPHIC MAPS
75.133

AUTOMATED SATELLITE MAPPING SYSTEM (MAPSAT)
82.071

AUTOMATED SLOPE GENERATION USING RASTER TECHNOLOGY
81.016

AUTOMATED SPATIAL DATA INFORMATION SYSTEMS: AVOIDING FAILURE
76.092 75.130

AUTOMATED STANDARD NAUTICAL CHART PRODUCTION
83.038

AUTOMATED STREET ADDRESS GEOCODING SYSTEMS: THEIR LOCAL ADAPTATION AND INSTITUTIONALIZATION
74.011

AUTOMATED URBAN MAPPING IN SOUTH CAROLINA
77.115

AUTOMATIC BOUNDARY DIGITISING FOR THE DEPARTMENT OF ENVIRONMENT
77.070

AUTOMATIC CARTOGRAPHIC FEATURE IDENTIFICATION
81.024

AUTOMATIC CARTOGRAPHY AND PLANNING
71.064 71.026

AUTOMATIC CARTOGRAPHY: DESCRIPTION OF C.H.S. SYSTEM. INTERIM REPORT
70.006

AUTOMATIC COLOUR MAP DIGITIZATION BY SPECIAL CLASSIFICATION
79.039

AUTOMATIC CONTOURING - AN EMPIRICAL EVALUATION OF SOME DIFFERING TECHNIQUES
71.061

AUTOMATIC CONTOURING ON THE GESTALT PHOTOMAPPER 2-1
74.038

AUTOMATIC DATA PROCESSING TECHNIQUES FOR GRAPHIC DATA DISPLAY GENERATION AND ANALYSIS. INTERIM TECHNICAL REPORT 1 SEPT. 75 - 31 AUG. 76
76.071

AUTOMATIC DATA PROCESSING TECHNIQUES FOR GRAPHIC-DATA DISPLAY, GENERATION AND ANALYSIS. INTERIM REPORT 1 SEPT. 76 - 31 AUG. 77
77.100

AUTOMATIC EXTRACTION OF IRREGULAR NETWORK DIGITAL TERRAIN MODELS
79.075

AUTOMATIC FEATURE EXTRACTION SYSTEM NO. 2
83.025

AUTOMATIC HILL SHADING USING AN AUTOMATIC FLATBED DRAFTING MACHINE WITH A STANDARD PHOTOHEAD
75.010

AUTOMATIC LINE DIGITIZATION
77.027

AUTOMATIC MAPPING AND ITS RELATION TO URBAN INFORMATION SYSTEMS
73.124

TITLE INDEX

AUTOMATIC MAPPING OF STRIP MINE OPERATIONS FROM SPACECRAFT DATA
74.100

AUTOMATIC METHODS IN IMAGE PROCESSING AND THEIR RELEVANCE TO MAP-MAKING
81.043

AUTOMATIC PLOTTING OF PIPE LINE LOCATIONS
75.162

AUTOMATIC PROCESSING AND CLASSIFICATION OF REMOTE SENSING DATA
72.091

AUTOMATIC PRODUCTION OF THEMATIC MAPS OF SLOPE STABILITY
78.085

AUTOMATIC RELOCATION OF GROUND CONTROL POINTS IN LANDSAT IMAGERY
81.036

AUTOMATICALLY SYMBOLIZED OUTPUT OF MAP DATA COMPILED AND SELECTED FROM A DATA BASE
75.052

AUTOMATING THE MARINE CHART PRODUCTION PROCESSES
73.059

AUTOMATION - THE NEW TREND IN CARTOGRAPHY
74.066 74.053

AUTOMATION - THE NEW TREND IN CARTOGRAPHY. INTERNATIONAL CARTOGRAPHERS ASSOCIATION. SCIENTIFIC WORK SESSION. FINAL REPORT. BUDAPEST, HUNGARY. AUG., 1973
74.039

AUTOMATION AND CARTOGRAPHY: A PROGRESS REPORT 1974-1977
79.001

AUTOMATION IN CARTOGRAPHY. INTERNATIONAL CARTOGRAPHIC ASSOCIATION. COMMISSION 3 WORKING GROUP. OCEANIC CARTOGRAPHY TECHNICAL WORKING SESSION; ENSCHEDE, NETHERLANDS. 21-25TH APR., 1975
75.267

AUTOMATION IN CARTOGRAPHY: A CASE OF TECHNOLOGY AND METHODOLOGY DIFFUSION FROM THE REMOTE SENSING SCIENCE
78.083

AUTOMATION IN HYDROGRAPHIC CHARTING
70.007

AUTOMATION OF CARTOGRAPHY AT THE MEXICAN STUDIES COMMISSION FOR THE NATIONAL TERRITORY
75.150

AUTOMATION OF THE LAND TITLE SYSTEM
73.089

AUTOMATION OF THEMATIC MAPS WITH ELECTRO-OPTICAL COLORMATION METHODS
77.124

AUTOMATION ORGANIZATION, CLASSIFICATION AND RETRIEVAL OF TITLE INFORMATION
71.071

AUTOMATION-THE NEW TREND IN CARTOGRAPHY. INTERNATIONAL CARTOGRAPHERS ASSOCIATION. SCIENTIFIC WORK SESSION. FINAL REPORT. BUDAPEST, HUNGARY. AUG., 1973
74.040

AUTOMATION: THE NEW TREND IN CARTOGRAPHY
74.114

AVAILABILITY AND APPLICATION OF NATIONAL COAL RESOURCE DATA SYSTEM
76.035

THE AVAILABILITY AND USE OF DIGITAL TOPOGRAPHIC DATA
83.128

B.C. SOIL INFORMATION SYSTEM
83.031

BALTIMORE CITY GEO-CODED LAND USE DATA SYSTEM FOR WATER QUALITY PLANNING
78.128

BART-2: PRE-BART STUDIES OF ENVIRONMENT, LAND USE, RETAIL SALES. PART 3. VOLUME 5. PILOT LAND USE, INFORMATION SYSTEM: WALNUT CREEK. FINAL REPORT
73.087

BASELINE AND INTERPRETATIVE BIOPHYSICAL INFORMATION: AVAILABLE DATA AND CURRENT PROGRAMS
74.034

BASIC ELEMENTS IN THE PLANNING OF A NEW LAND RECORD SYSTEM
75.069 75.023

BASIS CONCEPT - GEOCODING BY DBS
70.058

BASIS OF ASSESSMENT OF EQUIPMENT SYSTEMS
72.016

TITLE INDEX

BASIS: THE BAY AREA SPATIAL INFORMATION SYSTEM
79.220

BELIEF DIFFERENCES AMONG LAND RECORDS OFFICIALS & USERS: IMPLICATIONS FOR LAND RECORDS MODERNIZATION
83.147

BELIEFS REGARDING ISSUES RELATING TO LAND INFORMATION
82.198

BENCHMARK TESTS ON MAPPING SYSTEMS USED BY THE U.S. FOREST SERVICE
75.212

BENEFIT-COST STUDY OF THE LAND REGISTRATION AND INFORMATION SERVICE (LRIS) PROGRAMME
77.189

BENEFIT-COST STUDY OF THE LAND REGISTRATION AND INFORMATION SERVICE (LRIS) PROGRAMME. EXECUTIVE SUMMARY
77.190

BENEFITS ACCRUING FROM AN IMPROVED LAND RECORDS SYSTEM
73.005

BIBLIOGRAPHY OF GEOCODING AND GEOGRAPHIC BASE FILES
75.152

BIBLIOGRAPHY ON COMPUTER MAPPING
72.099

BIBLIOGRAPHY ON URBAN AND REGIONAL INFORMATION SYSTEMS: FOCUS ON GEOGRAPHICAL PERSPECTIVES
72.112

BIOGEOGRAPHIC GRID SYSTEM FOR AUSTRALIA
76.028

BIT-MERGE ROUTINE SPEEDS GRAPHICS
83.058

BNDRYNET
73.052

BRAZILIAN CARTOGRAPHY
75.087

BROAD PERSPECTIVE OF THE GEOGRAPHIC BASED INFORMATION SYSTEM (GBIS) IN THE URBAN ENVIRONMENT. SPECIAL TECHNICAL REPORT
72.045

BRUTE
82.024

BUFFALO CRIME MAPPING SYSTEM: A DESIGN STRATEGY FOR THE DISPLAY AND ANALYSIS OF SPATIALLY REFERENCED CRIME DATA
77.028

BUILDING A CONSTITUENCY FOR BETTER MAPPING AND LAND RECORDS AND MASTERING THE TECHNOLOGY-THE RMLR SOUTHEASTERN PENNSYLVANIA EXPERIENCE.
79.031

BUILDING AN INTEGRATED SYSTEM OF INVENTORIES: A BLM EXAMPLE
79.045

CADA-(COMPUTER AIDED DESIGN & ENGINEERING)
80.059

CADASTRAL GEOPROCESSING. PAPER 77-245
77.060

CADASTRAL SURVEYING AND MAPPING IN THE FRAMEWORK OF WORLD AND NATIONAL SURVEYING AND MAPPING (S&M) ACTIVITY
76.027

CADASTRAL SURVEYING: A PERSPECTIVE FROM THE PRIVATE PRACTICE SECTOR
82.209

CADASTRAL SYSTEMS FOR GEOPROCESSING
78.089

CADASTRE - U.S.A.
77.113

CADASTRE AS A BASIS OF A GENERAL LAND INVENTORY OF THE COUNTRY
74.014

CADASTRE AS A BASIS OF AN INTEGRATED GENERAL LAND SURVEY OF THE COUNTRY
73.020

CADASTRE: VARIOUS FUNCTIONS CHARACTERISTICS, TECHNIQUES AND THE PLANNING OF A MODERN LAND RECORDS SYSTEM.
74.063

CADASTRE: VARIOUS FUNCTIONS, CHARACTERISTICS, TECHNIQUES AND THE PLANNING OF A MODERN LAND RECORDS SYSTEM
74.058 74.016 74.015 74.014

CADASTRES IN PROPERTY TAX ADMINISTRATION
77.006

TITLE INDEX

CADASTRES, INCLUDING SOME ASPECTS OF ASSESSMENT OF REAL PROPERTY
75.114

CALCOMP PLOTTERS
80.114

CALCULATIONS OF GEOMETRIC PROPERTIES USING QUADTREES
81.169

CALFORM
79.213

CALGARY'S APPROACH TO COMPUTER ASSISTED MAPPING
78.171

CALGARY'S APPROACH TO COMPUTERIZED MAPPING
80.109

CALGARY'S COMPUTER MAPPING AND GEOGRAPHIC REFERENCING SYSTEM
80.028

CALIBRATION TECHNIQUES TO EVALUATE PROTOTYPE CARTOGRAPHIC RASTER SCANNERS
75.136

CALIFORNIA DIGITAL MAPPING PROGRAM
71.018

CAM-CARTOGRAPHIC AUTOMATIC MAPPING PROGRAM DOCUMENTATION. 5TH EDITION
77.044

CAMRAS
78.188

CAMRAS-COMPUTER ASSISTED MAPPING AND RECORDS ACTIVITY SYSTEMS
77.016

CAMS (CENTER FOR THE ANALYSIS OF MARINE SYSTEMS) INTERACTIVE ATLAS PACKAGE: A COMPUTERIZED PROGRAM FOR THE ARCHIVING AND PRESENTATION OF OCEANOGRAPHIC DATA
83.036

CAN. COUNCIL ON SURVEYING AND MAPPING. NAT'L STANDARDS FOR EXCHANGE OF DIGITAL TOPOGRAPHIC DATA
82.165

CANADA GEOGRAPHIC INFORMATION SYSTEM
76.145 75.232 73.083

CANADA GEOGRAPHIC INFORMATION SYSTEM (CGIS) -AN OVERVIEW
77.043

CANADA GEOGRAPHIC INFORMATION SYSTEM INTRODUCTION
78.151

CANADA LAND INVENTORY ON COMPUTER: PROCEEDINGS OF A USER STUDY/CANADA LAND INVENTORY: A TEST PROJECT. EDMONTON, ALBERTA, SEPT. 22 - OCT. 31, 1975
76.004

CANADA LAND INVENTORY PROGRAMME
73.111

CANADIAN CARTOGRAPHER AND THE COMPUTER: PRESENT TRENDS AND FUTURE CHALLENGES
73.126

CANADIAN DICTIONARY OF TERMS FOR TOPOGRAPHIC FEATURES (PILOT PROJECT)
79.046

THE CANADIAN FORESTRY INVENTORY MAPPING PROJECT
81.031

CANADIAN INDEX TO GEOSCIENCE DATA: HISTORY AND STATUS TO 1975
75.044

CANADIAN POSTAL CODE SYSTEM AS A GEOGRAPHIC IDENTIFIER IN SOCIO-ECONOMIC RESEARCH
77.198

CANSIM: GEOCODING: INPUT-OUTPUT TABLES. NEW DEVELOPMENTS AT THE BUREAU
71.009

CAPABILITY MAPPING AS A MEANS OF IMPROVING ENVIRONMENTAL QUALITY: PREREQUISITES AND METHODS
77.213

CAPE BRETON BUDWORM GRAPHICS DATA BASE (BUDWORM3)
79.042

CAPTURE AND ENCODING OF AREA-ORIENTED GEOGRAPHIC MAPS
78.093

CARETS: A PROTOTYPE REGIONAL ENVIRONMENTAL INFOMATION SYSTEM. VOLUME 7. LAND USE INFORMATION AND AIR QUALITY PLANNING. FINAL REPORT
75.004

CARETS: A PROTOTYPE REGIONAL ENVIRONMENTAL INFORMATION SYSTEM. VOLUME II. POTENTIAL USEFULNESS OF CARETS DATA FOR ENVIRONMENTAL IMPACT ASSESSMENT. FINAL REPORT
76.007

TITLE INDEX

CARETS: A PROTOTYPE REGIONAL ENVIRONMENTAL INFORMATION SYSTEM. VOLUME 12. USER EVALUATION OF EXPERIMENTAL LAND USE MAPS AND RELATED PRODUCTS FROM THE CENTRAL ATLANTIC TEST SITE. FINAL REPORT
76.008

CARETS: A PROTOTYPE REGIONAL ENVIRONMENTAL INFORMATION SYSTEM. VOLUME 3. TOWARD A RATIONAL LAND USE INFORMATION SYSTEM. FINAL REPORT
76.005

CARETS: A PROTOTYPE REGIONAL ENVIRONMENTAL INFORMATION SYSTEM. VOLUME 5. INTERPRETATION COMPILATION AND FIELD VERFICATION PROCEDURES IN THE CARETS PROJECT. FINAL REPORT
76.006

CARETS: A PROTOTYPE REGIONAL ENVIRONMENTAL INFORMATION SYSTEM. VOLUME 9. STORE ZONE LAND USE AND LAND COVER: CENTRAL ATLANTIC REGIONAL ECOLOGICAL TEST SITE. FINAL REPORT
75.005

CARTE: A THEMATIC MAPPING PROGRAM
75.273

CARTE: A THEMATIC MAPPING PROGRAMME
74.139

CARTOGRAMS AND TOPOLOGY
82.234

CARTOGRAPHERS EXAMINING AUTOMATED METHODS OF MAP GENERALIZATION AND DISPLACEMENT
83.029

CARTOGRAPHIC AND ATTRIBUTE DATA BASE CREATION FOR PLANNING ANALYSIS THROUGH GBF/DIME AND CENSUS DATA PROCESSING
83.112

CARTOGRAPHIC BASE FILES AT LAWRENCE BERKELEY LABORATORY: 1978 INVENTORY
79.029

CARTOGRAPHIC BASE FILES AT LAWRENCE BERKELEY LABORATORY: 1979 INVENTORY
80.013

CARTOGRAPHIC DATA BASE DESIGN STUDY. VOLUME 1 - CONCEPT. VOLUME 2 - IMPLEMENTATION. VOLUME 3 - DOCUMENTATION. FINAL REPORTS AUG. 70-JAN. 72
72.015

CARTOGRAPHIC DATA BASE HIERARCHY. VOLUME 1. SYSTEMS ANALYSIS. VOLUME 2. SYSTEM IMPLEMENTATION AND TESTING. VOLUME 3. PROGRAM DOCUMENTATION. FINAL REPORTS-JUNE 72-AUG. 73
74.006

CARTOGRAPHIC DATA BASE IN SEEDIS
75.116

CARTOGRAPHIC DATA BASES AND SOFTWARE
81.202

CARTOGRAPHIC DATA BASES AND SOFTWARE PLUS CADASTRAL DATA BASES
81.192

CARTOGRAPHIC DATA BASES PANEL
76.029

CARTOGRAPHIC DATA STRUCTURE FOR EFFICIENT COMPUTER PROCESSING
77.144

CARTOGRAPHIC DATA STRUCTURES
75.182

CARTOGRAPHIC DATA STRUCTURES PANEL
76.125

CARTOGRAPHIC DISPLAY REQUIREMENTS
79.199

A CARTOGRAPHIC ELECTRON BEAM SCANNER DESIGN STUDY
81.021

CARTOGRAPHIC EVALUATION OF ENVIRONMENTAL-MANAGEMENT STRATEGIES
82.041

CARTOGRAPHIC FUNCTIONS OF THE IRDS CONCEPTUAL SYSTEM: INTERACTIVE RASTER DATA STRUCTURES PROJECT INFORMATION
82.297

CARTOGRAPHIC MANIPULATION PANEL
76.023

CARTOGRAPHIC MAPPING STUDY
82.060

CARTOGRAPHIC MODEL FOR ASSESSING OUTDOOR RECREATION OPPORTUNITY
80.010

THE CARTOGRAPHIC POTENTIAL OF TELIDON
82.235

CARTOGRAPHIC POTENTIAL OF THE BUREAU OF LAND MANAGEMENT GEOGRAPHIC INFORMATION SYSTEM
83.172

CARTOGRAPHIC SUBSYSTEM OF CANSIS
80.069

CARTOGRAPHIC SYMBOLOGY PANEL
76.091

CARTOGRAPHIC VERACITY - A VARIABLE THAT SHOULD BE A CONSTANT
76.017

CARTOGRAPHY FOR THE COMPUTER
75.090

CASE STUDY OF A COMPLETED APPLICATION USING CRIS FOR FOREST MANAGEMENT INVENTORY
79.112

CASE STUDY OF A THEMATIC MAP APPLICATION FOR AIR POLLUTION ANALYSIS
79.145

CASE STUDY OF AN APPLICATION OF COMPUTER MAPPING IN OIL-SHALE RESOURCE MAPPING
79.056

CASE STUDY OF COAL RESOURCE EVALUTION IN THE CANADIAN ROCKIES USING DIGITAL TERRAIN MODELS
79.079

CASE STUDY OF COMPUTER MAPPING TECHNIQUES RELATING TO DEMOGRAPHIC STUDIES AT BELL LABORATORIES
79.141

CASE STUDY OF COMPUTER-AIDED TRANSMISSION LINE SITING
79.051

CASE STUDY OF THE ANALYSIS OF THE CAPABILITY OF UNDEVELOPED LANDS TO CONTRIBUTE TO WATER QUALITY DEGRADATION
79.197

CASE STUDY OF THE OPERATIONAL ASPECTS OF THE NATURAL RESOURCE INFORMATION SYSTEM NRIS) USED FOR NATURAL RESOURCE PLANNING
78.145

CASE STUDY OF THE USE OF COMPUTER MAPPING EVALUATING ELECTION RETURNS AND RELEVANT SOCIO-ECONOMIC FACTORS
79.216

CASE STUDY OF THE ZULIA REGIONAL PLANNING STUDY, DESCRIBING WORK COMPLETED
79.054

CASOC DATA SERVICE RECOMMENDATIONS
76.054

CATCH: COMPUTER ASSISTED TOPOGRAPHY, CARTOGRAPHY AND HYPSOGRAPHY. PART 4. SEESII: A SUBROUTINE PACKAGE FOR DETERMINING THE VISIBILITY OF OBJECTS THROUGHOUT A REGION
76.158

CELL-BASED LAND USE SCREENING PROCEDURE FOR REGIONAL SITING ANALYSIS
76.089

CELNDX: A COMPUTER PROGRAM TO COMPUTE CELL INDICES
76.172

CENSUS FIELD STUDY CARTOGRAPHIC SERIES
77.238

CENSUS OF GOVERNMENTS AND PROPERTY VALUES, PARCELS, AND TAXES IN TODAY'S LOCAL FINANCE
73.017

CENSUS RESPONSIBILITIES INVOLVING PARCEL IDENTIFICATION AND LAND USE
73.018

CENSUS USE STUDY: GRIDS, A COMPUTER MAPPING SYSTEM
72.103

CENTRAL ATLANTIC REGIONAL ECOLOGICAL TEST SITE (CARETS): A PROTOTYPE REGIONAL ENVIRONMENTAL INFORMATION SYSTEM
73.004

CENTRAL PROPERTY REGISTER OF THE CITY OF TORONTO
78.042

CEREAS: A COMPUTERIZED MAPPING SYSTEM FOR ENVIRONMENTAL REVIEWS
83.014

CEREAS: AN INTERACTIVE COMPUTER-MAPPING SYSTEM FOR ENVIRONMENTAL ASSESSMENTS
83.070

CHALLENGE TO CARTOGRAPHERS
76.011 75.017

CHANGING PHILOSOPHICAL-TECHNICAL ASPECTS OF THEMATIC CARTOGRAPHY
74.084

CHARACTERISTICS AND REQUIREMENTS OF A PROTOTYPICAL HOUSING INFORMATION SYSTEM (BASED ON AN EVALUATION OF OPERATING SYSTEMS IN INDIANAPOLIS-MARION COUNTY, IN. AND SIX OTHER SELECTED SAMPLE JURISDICTIONS). FINAL REPORT
74.065

TITLE INDEX

CHARGE TO THE CONFERENCE
75.174

CHARLOTTE IMIS GEOGRAPHIC DATA BASE
73.109

CHART 1, GEOCODING SYSTEMS SUMMARY. CHART 2, GENERALIZED HIERARCHICAL RELATIONSHIP OF VARIOUS GEOCODING SYSTEMS
74.130

CHARTING UTILIZATION REQUIREMENTS FOR A DIGITAL CARTOGRAPHIC DATA BASE
82.130 82.063

CHESAPEAKE BAY RESEARCH AND MANAGEMENT SHORELINE DATA BANK
75.080

CHICAGO TITLE COMPUTER SYSTEM AIDS ACCURACY
70.060

CHORO: AN AUTOMATED CHOROPLETH MAPPING
73.143

CHORO: CHOROPLETH MAPPING BY COMPUTER
77.024

CHOROLOGICAL INFORMATION PROCESSING SYSTEM, NORMAP
77.140

CHOROPLETHIC PLOTTER MAPPING FOR A SMALL MINICOMPUTER
77.173

CIMS: THE CARTOGRAPHIC INFORMATION MANAGEMENT SYSTEM
81.018

CITY OF CALGARY CITY-OWNED LAND INVENTORY SYSTEM
77.118

CITY OF CHARLOTTE USAC PROJECT: TASK 3 COMPLETION REPORT. FINAL
75.054

CITY OF DES MOINES USAC GEOPLANNING PROJECT: ORIENTATION AND TRAINING. TASK 6 REPORT
73.036

CITY OF DES MOINES USAC GEOPLANNING PROJECT: SYSTEMS IMPLEMENTATION /DEMONSTRATION TASK 4 REPORT
73.035

CITY OF DES MOINES USAC. GEOPLANNING PROJECT. FINAL REPORT
73.037

CITY OF TORONTO PLANNING BOARD COMPUTER MAPPING SYSTEM
79.052

CITY OF TORONTO'S CENTRAL PROPERTY REGISTER OR EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT YOUR PROPERTY, BUT WERE AFRAID TO ASK
77.068

CITY OF WICHITA FALLS USAC PROJECT: GEOGRAPHIC BASE INDEX SYSTEM (GBIS) UPDATE APPLICATIONS COMPLETION, REPORT
75.058

CITY'S TOPOGRAPHIC MAPPING SYSTEM SAVES TIME, MONEY, AND IS MORE ACCURATE
76.184

CITYWIDE PARCEL INFORMATION SYSTEM. SYSTEMS DESIGN AND OPERATIONS MANUAL. FINAL REPORT
74.028

CLASSIFICATION AND REVIEW OF COORDINATE IDENTIFICATION AND COMPUTER MAPPING SYSTEM
73.048

CLASSIFICATION OF CARTOGRAPHIC FEATURES THROUGH WALSH TRANSFORMS
82.040

A CLASSIFICATION OF SOFTWARE COMPONENTS COMMONLY USED IN GEOGRAPHIC INFORMATION SYSTEMS
82.325

CLOUD-COVER ESTIMATION: USE OF GOES IMAGERY IN DEVELOPMENT OF CLOUD-COVER DATA BASE FOR INSOLATION ASSESSMENT
82.112

COASTAL WETLAND MAPPING
76.103

CODING AND INTERPOLATION OF TOPOGRAPHIC SURFACE
77.017

COEFFICIENT OF DIFFERENTIAL: A CARTOGRAPHIC APPROACH FOR LAND USE PLANNING ANALYSIS OF ENVIRONMENTAL CHARACTERISTICS
79.157

COINCIDENT EXTRACTION OF LINE OBJECTS FROM STEREO IMAGE PAIRS
83.013

TITLE INDEX

COLOR IMAGE QUANTIZATION FOR FRAME BUFFER DISPLAY
82.087

COLOR PLOTTER FOR PRESENTATION OF GEODATA USING THREE ELECTRICALLY CONTROLLED INK JETS
79.015

COLOR PLOTTING SYSTEM
79.110

COMMUNITY DATA BASE: FACT OR FICTION? - GEORGIA COORDINATE MAPPING PROJECT
75.007

COMMUNITY GEOGRAPHIC DATA BASE
82.103

COMMUNITY WIDE USE OF INTERACTIVE MAPPING
80.110

COMPARATIVE COSTS OF DATA HANDLING IN LAND RESOURCE SURVEYS
77.074

COMPARING SOURCES OF TERRAIN DATA FOR A GEOGRAPHICAL INFORMATION SYSTEM
81.136

COMPARISON OF GRAPHICS PACKAGES USED WITH THE GEOECOLOGY DATA BASE
81.107

COMPARISON OF SELECTED OPERATIONAL CAPABILITIES OF FIFTY-FOUR GEOGRAPHIC INFORMATION SYSTEMS
77.192

COMPILATION OF DATA FOR COMPUTER-ASSISTED RELIEF CARTOGRAPHY
75.277

COMPIS, GBF/DIME AND HUMAN RESOURCES: A LOCAL APPLICATION
78.097

COMPOSITE COMPUTER MAPPING: BECOMING A TOOL IN SEARCH FOR ENERGY SOURCES
76.185

COMPREHENSIVE APPLICATION OF A GEO-BASED INFORMATION SYSTEM ON A REGION IN COLORADO
80.108

COMPREHENSIVE LAND DATA BANK FOR PRINCE EDWARD ISLAND
72.043

COMPREHENSIVE LAND DATA BANK FOR PRINCE EDWARD ISLAND. A DRAFT PROPOSAL
72.075

COMPRESSION AND COMPACTION OF BINARY RASTER IMAGES
83.191

THE COMPUTER AGE IN SURVEYING EVOLUTION
83.034

COMPUTER AID EYED FOR LAND RECORDS
74.141

COMPUTER AIDED DESIGN IN RELATION TO EARTHWORK COMPUTATIONS
83.115

COMPUTER AIDED DIGITIZING OF BOUNDARY NETWORKS
75.244

COMPUTER AIDED MAP COMPILATION: CACM PROGRAMME. - GENERAL USER DESCRIPTION
73.021

COMPUTER AIDED MAPPING
83.004 83.003

COMPUTER AIDED MAPPING (CITATIONS FROM THE ENGINEERING INDEX DATA BASE). REPORT FOR 1970-79
80.017

COMPUTER AIDED MAPPING (CITATIONS FROM THE NTIS DATA BASE). REPORT FOR 1976-79
80.018

COMPUTER AIDED MAPPING. 1970 - APRIL, 1982 (CITATIONS FROM THE ENGINEERING INDEX DATA BASE)
82.070

COMPUTER AIDED MAPPING. 1976 - APRIL, 1982 (CITATIONS FROM THE NTIS DATA BASE)
82.069

COMPUTER AIDED MAPPING, 1970 - JANUARY, 1981 (CITATIONS FROM THE ENGINEERING INDEX DATA BASE)
81.109

COMPUTER AIDED MAPPING, 1976 - JANUARY, 1981 (CITATIONS FROM THE NTIS DATA BASE)
81.108

COMPUTER AIDS FOR MAP-BASED RECORD SYSTEMS
78.007

COMPUTER ANALYSIS OF TOPOGRAPHY: A COMPARISON OF TERRAIN STORAGE METHODS
75.148

COMPUTER AND EDUCATION
81.191 81.190

COMPUTER APPLICATIONS IN LAND-USE MAPPING AND THE MINNESOTA LAND MANAGEMENT INFORMATION SYSTEM
75.119

COMPUTER ASSISTANCE FOR PLANNING SCHOOL ATTENDANCE BOUNDARIES
76.178

COMPUTER ASSISTANCE IN THE PREPARATION OF A DETAILED SOIL SURVEY OF THE PADTHAWAY IRRIGATION AREA
77.010

COMPUTER ASSISTED AREAS SOURCE EMISSIONS (CAASE) GRIDDING PROCEDURE (REVISED). UNIVAC 1110/EXEC 8 VERSION USER'S MANUAL. FINAL REPORT
78.078

COMPUTER ASSISTED CARTOGRAPHY: A MULTIDISCIPLINARY ACTIVITY
82.214

COMPUTER ASSISTED COLLECTION MAPS FOR THE 1981 CENSUS OF CANADA
81.025

COMPUTER ASSISTED FEATURE ANALYSIS FOR DIGITAL LANDMASS SYSTEM (DLMS) PRODUCTION AT DMA
82.273

COMPUTER ASSISTED MAPPING AND RECORDS ACTIVITIES SYSTEMS: CAMRAS
79.009 79.008

COMPUTER ASSISTED MAPPING AS PART OF A STUDY ON ACID RAIN
82.166

COMPUTER ASSISTED MAPPING. PRELIMINARY REPORT. PROJECT 201
77.177

COMPUTER ASSISTED STEREO COMPILATION USING THE WILDMAP SYSTEM
81.200

COMPUTER ATLAS OF KENYA WITH A BIBLIOGRAPHY OF COMPUTER MAPPING
71.069

COMPUTER ATLAS OF OTTAWA-HULL (WITH A BIBLIOGRAPHY OF COMPUTER-MAPPING)
70.049

COMPUTER BASED INSTRUCTIONAL SYSTEM FOR TEACHING THEMATIC MAPPING
79.011

COMPUTER CARTOGRAPHY
72.077

COMPUTER CARTOGRAPHY AND GEOGRAPHIC INFORMATION SYSTEMS IN SWEDEN: A SYNOPSIS
77.234

COMPUTER CARTOGRAPHY AND PROFESSIONAL GEOGRAPHERS
75.211

COMPUTER CARTOGRAPHY AS IT IS TAUGHT AT LOUISIANA STATE UNIVERSITY
79.121

COMPUTER CARTOGRAPHY IN CANADA
73.126 73.124 73.085 73.084 73.083 73.068 73.067 73.059 73.057

COMPUTER CARTOGRAPHY IN ENERGY APPLICATIONS
78.092

COMPUTER CARTOGRAPHY OFFERS COUNTY UNLIMITED COMBINATIONS AND CONSIDERABLE SAVINGS
76.037

COMPUTER CARTOGRAPHY SERVICES OF THE UNIVERSITY OF ALABAMA CARTOGRAPHIC LABORATORY
80.082

COMPUTER CARTOGRAPHY WORLD-WIDE TECHNOLOGY AND MARKETS
76.150

COMPUTER CARTOGRAPHY: A WORKING BIBLIOGRAPHY
72.078

COMPUTER CODING OF ENVIRONMENTAL SURVEYING DATA
77.034

COMPUTER DATA BANK FOR REGIONAL PLANNING
74.031

COMPUTER DISPLAY AND ANALYSIS OF URBAN INFORMATION THROUGH TIME AND SPACE
70.029

COMPUTER EXECUTED INTERPOLATION OF CONTOURS INTO ARRAYS OF RANDOMLY DISTRIBUTED HEIGHT-PONTS
77.252 77.242

COMPUTER GENERATED AREAL SYMBOLS: SOME DESIGN CONSIDERATIONS
79.050

TITLE INDEX

COMPUTER GENERATED MAPS. PART 1
79.114

COMPUTER GENERATED MAPS. PART 2
79.115

COMPUTER GENERATION OF A LAKE DATA FILE FROM LANDSAT DIGITAL DATA
82.230

COMPUTER GRAPHIC EDITING URBAN MAPS: A TOPOLOGIC CLASSIFICATION OF URBAN POLYGON FILES
75.001

COMPUTER GRAPHICS AND POLITICAL CARTOGRAPHY: ASPEX OF GERRYMANDERING
80.112

COMPUTER GRAPHICS AND PUBLIC HEARINGS
75.086

COMPUTER GRAPHICS APPLICATIONS IN TRANSPORTATION INFORMATION SYSTEMS
75.269

COMPUTER GRAPHICS APPLIED TO GEOGRAPHIC BASE FILE EDITING AND MAINTENANCE
73.082

COMPUTER GRAPHICS AT OAK RIDGE NATIONAL LABORATORY: SOME OBSERVATIONS BASED ON EXPERIENCE
81.104

COMPUTER GRAPHICS CAPABILITIES AT BATTELLE, PACIFIC NORTHWEST LABORATORIES
77.075

COMPUTER GRAPHICS DEMONSTRATION-AREA COAL AVAILABILITY STUDIES
77.023

COMPUTER GRAPHICS FOR REGIONAL PLANNING: MONITORING WOODLAND RESOURCES BY A LAND INFORMATION SYSTEM
82.291

COMPUTER GRAPHICS IN ROAD PLANNING AND DESIGN
82.086

COMPUTER GRAPHICS IN URBAN AND REGIONAL PLANNING: SOME DEVELOPMENT PROJECT IN SCANDINAVIA
75.214

COMPUTER GRAPHICS SYSTEMS: AN EXAMPLE FROM IOWA
77.098

COMPUTER HANDLING OF GEOGRAPHICAL DATA
76.154

COMPUTER HANDLING OF GEOGRAPHICAL DATA: AN EXAMINATION OF SELECTED GEOGRAPHIC INFORMATION SYSTEMS
76.157 76.155

COMPUTER HELPS SCIENTISTS MAP CANADA'S NORTHLAND: UNIVERSITY OF CALGARY SURVEYING ENGINEER HONORED
80.117

COMPUTER IMPLEMENTED LAND COVER CLASSIFICATION USING LANDSAT MSS DIGITAL DATA: A COOPERATIVE RESEARCH PROJECT BETWEEN THE NATIONAL PARK SERVICE AND NASA. 3: VEGETATION AND OTHER LAND COVER ANALYSIS OF SHENANDOAH NATIONAL PARK
81.006

COMPUTER IN CONTEMPORARY CARTOGRAPHY
80.099

COMPUTER IN GEOLOGY: A FORECAST FOR THE 1980'S
79.089

COMPUTER MAP ANALYSIS IN GEOLOGY
79.179

COMPUTER MAP GENERATION IN AN AUTOMATIC VEHICLE MONITORING SYSTEM
79.160

COMPUTER MAPPING A SMOOTH COURSE FOR OUTSIDE PLANT LOCATION RECORDS
81.069

COMPUTER MAPPING AND DIGITIZING APPLICATIONS. NORTHERN REGION. FOREST SERVICE. U.S.D.A., PAPER 75-209
75.197

COMPUTER MAPPING AND GEOGRAPHIC CARTOGRAPHY
71.040

COMPUTER MAPPING AND GEOGRAPHIC INFORMATION SYSTEMS IN GERMANY
79.210

COMPUTER MAPPING AND ITS IMPACT ON KANSAS CITY, KANSAS AND WYANDOTTE COUNTY
75.071

COMPUTER MAPPING AT NHLBI (NATIONAL HEART, LUNG AND BLOOD INSTITUTE)
79.072

TITLE INDEX

COMPUTER MAPPING DEVELOPMENT AT THE CITY OF CALGARY
83.182

COMPUTER MAPPING FOR BIOMASS INVENTORIES
83.113

COMPUTER MAPPING FOR GUIDING SUBURBAN DEVELOPMENT
77.229

COMPUTER MAPPING FOR LAND USE PLANNING (COMLUP)
73.006

COMPUTER MAPPING FOR POLICY ANALYSIS AND DECISION MAKING
71.081

COMPUTER MAPPING FOR RESOURCE ANALYSIS
78.011

COMPUTER MAPPING FOREST RESOURCE MANAGEMENT
74.007

COMPUTER MAPPING IN AGROMETEOROLOGY
72.116

COMPUTER MAPPING IN EDUCATION, RESEARCH AND MEDICINE. VOLUME 5
79.216 79.187 79.159 79.125 79.121 79.105
79.092 79.066 79.049 79.048 79.019 79.011

COMPUTER MAPPING IN NATURAL RESOURCES AND THE ENVIRONMENT. VOLUME 4
79.218 79.197 79.181 79.145 79.126 79.118
79.112 79.093 79.079 79.051

COMPUTER MAPPING IN NATURAL RESURCES AND THE ENVIRONMENT. VOLUME 4
79.149

COMPUTER MAPPING IN PEST MANAGEMENT
75.093

COMPUTER MAPPING IN PHENOLOGICAL ANALYSIS
74.022

COMPUTER MAPPING OF BIRTH WEIGHTS AS AN APPROACH TO ENVIRONMENTAL EPIDEMINLOGY
80.032

COMPUTER MAPPING SOFTWARE AND GEOGRAPHIC DATA BASE DEVELOPMENT: OAK RIDGE NATIONAL LABORATORY USER EXPERIENCE
79.102

COMPUTER MAPPING SOFTWARE AND GEOGRAPHIC DATA BASE DEVELOPMENT: OAK RIDGE NATIONAL LABORATORY USER EXPERIENCE, CONFERENCE ON COMPUTER MAPPING SOFTWARE AND DATA BASES, CAMBRIDGE, MA., JULY 26, 1978
78.081

COMPUTER MAPPING SOFTWARE AT THE LAWRENCE BERKELEY LABORATORY
79.221 78.177

COMPUTER MAPPING SOFTWARE ON THE AOIPS
79.026 78.018

COMPUTER MAPPING TECHNIQUE FOR NATURAL RESOURCE AND LAND USE PLANNING
76.112

COMPUTER MAPPING WITH MICROGRAPHICS
74.107

COMPUTER MAPPING: A REVIEW OF WHAT IS AVAILABLE AND WHAT IS USEFUL FOR EXPLORATION PURPOSES
81.157

COMPUTER MAPPING: SOCIAL DATA FOR ST. LOUIS
75.108

COMPUTER MAPS AND GEOGRAPHIC DATA ANALYSIS: AN EXHIBIT NOTEBOOK
76.062

COMPUTER PROCESSING AND MAPPING REQUIREMENTS OF THE ECOLOGICAL MAPPING COMMUNITY PROJECT
81.001

COMPUTER PROCESSING OF CARTOGRAPHIC DATA
75.240

COMPUTER PRODUCED CHOROPLETH MAPS WITH OVERLAYS: AN AID IN URBAN AND REGIONAL ANALYSIS
75.145

COMPUTER PROGRAM FOR QUASI-CONTINUOUS CHOROPLETH MAPS
78.019

COMPUTER PROGRAM USER'S MANUAL FOR FIREFINDER DIGITAL TOPOGRAPHIC DATA VERIFICATION LIBRARY DUBBING SYSTEM
81.088

COMPUTER PROGRAMME FOR GEOGRAPHIC CLUSTERING
77.097

TITLE INDEX

COMPUTER SCIENCE ASPECTS OF THE MAPPING PROBLEM
75.175

COMPUTER SOFTWARE FOR GEOGRAPHIC DATA HANDLING. VERSION A. WORKING DRAFT ONLY
75.125

COMPUTER SOFTWARE FOR SPATIAL DATA HANDLING. REVIEW DRAFT. (EXTRACTED FROM A COMPLETE REPORT)
76.086

COMPUTER SOFTWARE FOR SPATIAL DATA HANDLING: CURRENT STATUS AND FUTURE DEVELOPMENTAL NEEDS
77.156

COMPUTER SOFTWARE SYSTEM FOR INTEGRATION AND ANALYSIS OF GRID-BASED REMOTE SENSING DATA WITH OTHER NATURAL RESOURCE DATA. PAPER 77-103
77.219

COMPUTER STORAGE AND RETRIEVAL OF GEOLOGIC DATA ON COAL DEPOSITS
72.115

COMPUTER STORAGE AND RETRIEVAL OF POSITION - DEPARTMENT DATA
82.139

COMPUTER SYSTEM AND A DATA BASE FOR STUDIES OF HEALTH AND THE ENVIRONMENT
79.081

COMPUTER SYSTEM FOR INTERACTIVE ANALYSIS AND PLANNING OF URBAN AND TRANSPORTATION SYSTEMS
72.048

COMPUTER SYSTEM FOR PENNSYLVANIA STATE FOREST MANAGEMENT INVENTORY
79.100

A COMPUTER SYSTEM TO ASSIST IN THE DESIGN OF MINE LAYOUTS (MINLAY)
82.151

COMPUTER USE IN MINE EVALUATION AND ENGINEERING
78.144

COMPUTER VERSION OF THREE RELIEF REPRESENTATIONS
75.183

COMPUTER VISION RESEARCH AND ITS APPLICATIONS TO AUTOMATED CARTOGRAPHY
83.019

COMPUTER VISION, GRAPHICS AND IMAGE PROCESSING 22
83.205

COMPUTER-AIDED CARTOGRAPHY
77.193

COMPUTER-AIDED MAP-MAKING
77.157

COMPUTER-AIDED PLOTTING OF TOPOGRAPHIC SURVEY DATA
79.154

COMPUTER-AIDED REGIONAL PLANNING FOR MINERAL RESOURCES
77.031

COMPUTER-ASSISTED CARTOGRAPHIC SYSTEMS AS FURTHER AIDS TO GEOGRAPHICAL REFERENCING: A REVIEW OF SEVERAL ADVANCED AUTOMATED CARTOGRAPHY SYSTEMS, THEIR PURPOSE, OPERATIONAL TECHNIQUES, EQUIPMENT, DATA BASE FACILITIES AND CURRENT AND IMMINENT CAPABILITIES
77.181

COMPUTER-ASSISTED CARTOGRAPHY AND GEOGRAPHIC INFORMATION PROCESSING: HOPE AND REALISM
82.164

COMPUTER-ASSISTED CARTOGRAPHY. PRINCIPLES AND PROSPECTS
82.160

COMPUTER-ASSISTED FEATURE ANALYSIS FOR DIGITAL LANDMASS SYSTEM (DLMS) PRODUCTION AT DMA
82.182

COMPUTER-ASSISTED INFORMATION SYSTEMS AND COMPUTER-ASSISTED CARTOGRAPHY: TOOLS OR TINKER TOYS OF URBAN GOVERNANCE
75.263

COMPUTER-ASSISTED LAND INFORMATION SYSTEM FOR A RURAL COUNTY: RAPLI-II
77.250

COMPUTER-ASSISTED LAND RESOURCES PLANNING. PLANNING ADVISORY SERVICE REPORT
79.183

COMPUTER-ASSISTED MAP COMPARISON
82.062

COMPUTER-ASSISTED MAPPING FOR CENSUS COLLECTION - APPLICATION EXPERIENCES
83.138

TITLE INDEX

COMPUTER-ASSISTED MAPPING FOR CENSUS COLLECTION - PROGRESS AND PROGNOSIS
83.222

COMPUTER-ASSISTED MAPPING FOR THE CENSUS OF CANADA
83.127

COMPUTER-ASSISTED MAPPING SYSTEM SPECIFICATIONS FOR PROCUREMENT OF COMPUTER MAPPING SYSTEMS
78.112

COMPUTER-ASSISTED NATIONAL COAL INVENTORY
78.090

COMPUTER-ASSISTED PHOTO INTERPRETATION RESEARCH AT USAETL
81.035

COMPUTER-ASSISTED PHOTO-INTERPRETATION
83.125

COMPUTER-ASSISTED PROCESS OF CARTOGRAPHIC GENERALIZATION IN TOPOGRAPHIC MAPS
79.124

COMPUTER-ASSISTED THEMATIC MAPPING WITH A DEDICATED MINICOMPUTER SYSTEM
75.198

COMPUTER-BASED FIELD DATA FILES IN THE REGIONAL AND ECONOMIC GEOLOGY DIVISION, GEOLOGICAL SURVEY OF CANADA
75.099

COMPUTER-BASED FILES ON MINERAL DEPOSITS: GUIDELINES AND RECOMMENDED STANDARDS FOR DATA CONTENT. FINAL REPORT
78.115

COMPUTER-BASED GEOLOG/ASSAYLOG SYSTEM FOR COAL EXPLORATION AND EVALUATION
77.110

COMPUTER-BASED GEOLOGICAL DATA SYSTEMS: EMERGING BASIS FOR INTERNATIONAL COMMUNICATIONS
72.020

COMPUTER-BASED LAND TITLES SYSTEM
70.040

COMPUTER-BASED LAND USE SUITABILITY MAPS
72.058

COMPUTER-BASED LAND USE SUITABILITY MAPS. PAPER 10015
73.078

COMPUTER-BASED STORAGE AND RETRIEVAL OF GEOSCIENCE INFORMATION: BIBLIOGRAPHY 1970-72
73.025

COMPUTER-BASED SYSTEMS FOR GEOLOGICAL FIELD DATA: AN INTERNATIONAL STATE-OF-THE-ART REVIEW FOR 1973
75.268 75.257 75.240 75.231 75.222 75.202 75.190 75.189 75.137 75.126 75.123 75.118 75.099 75.034 75.029

COMPUTER-GENERATED SHADED RELIEF IMAGES
75.024

COMPUTER-ORIENTED LAND USE FORECASTING MODEL WITH MAPPING CAPABILITY
75.155

COMPUTER-PROCESSED WELLSITE LOG COMPUTATION
78.010

COMPUTER-SUPPORTED STEREOCOMPILATION
78.096

COMPUTERIZATION OF LAND INDEXES AND USE OF GEOCODES. INTERNAL REPORT
77.182

COMPUTERIZATION OF LAND RECORDS BY THE TITLE INDUSTRY
73.077

COMPUTERIZATION OF LAND RECORDS IN THE MARITIME PROVINCES OF CANADA
74.024

COMPUTERIZATION OF LAND TITLE RECORDS
74.061

COMPUTERIZED ANNOTATED BIBLIOGRAPHY ON LAND INFORMATION SYSTEMS
78.117

COMPUTERIZED GEOGRAPHIC INFORMATION SYSTEMS, AN ASSESSMENT OF IMPORTANT FACTORS IN THEIR DESIGN, OPERATION AND SUCCESS
75.194

COMPUTERIZED GRAPHIC TECHNICAL APPLICATIONS FOR FEDERAL MINERAL LEASE MANAGEMENT SUPPORT
77.233

COMPUTERIZED LAND REGISTRATION IN ONTARIO - A COMPARATIVE COST ANALYSIS
71.044

COMPUTERIZED LAND USE/SALES ACTIVITY FOR MARKETING ALLOCATION
73.123

COMPUTERIZED MAPPING FOR ASSESSMENT OF ENVIRONMENTAL IMPACTS: A CASE STUDY
77.194

COMPUTERIZED PLANT IN JOINT USE
75.260

COMPUTERIZED PROCESSING OF LARGE AMOUNTS OF METEOROLOGICAL DATA
77.114

COMPUTERIZED SOIL SURVEY & YIELD POTENTIAL SYSTEM REQUIREMENT, DEFINITION & SYSTEM DESIGN ALTERNATIVES
82.306

COMPUTERIZED SURVEYING AND PLOTTING A SUPPORT OF A MULTI-PURPOSE CADASTRAL PROGRAM
80.053

COMPUTERIZED SYSTEM FOR ESTIMATING AND DISPLAYING SHORTRUN COSTS OF SOIL CONSERVATION PRACTICES
81.207

COMPUTERIZED SYSTEMS IN MASS APPRAISING
71.037

COMPUTERIZED URBAN DEVELOPMENT INFORMATION SYSTEM
72.055

COMPUTERS AND SPATIAL ANALYSIS: EXTENSIONS OF GEOGRAPHIC RESEARCH
70.022

COMPUTERS AND STATISTICS AS AN AID TO APPRAISING SINGLE-FAMILY RESIDENCES
71.033

COMPUTERS AND THE RENAISSANCE OF CARTOGRAPHY
76.098

COMPUTERS ARE NOW USED TO MAP AND CODE SOILS DATA
75.282

COMPUTERS FILES AND ATTRIBUTE CODES FOR DIGITAL LINE GRAPHS
77.227

COMPUTERS FILES FOR DIGITAL ELEVATION MODELS
77.228

COMPUTERS IN CARTOGRAPHY
82.268

COMPUTING IN THE CITY OF MILWAUKEE: THE DATA-BASED GEOGRAPHICAL INFORMATION SYSTEM
82.101

COMPUTING PERIMETERS OF REGIONS IN IMAGE REPRESENTED BY QUAD-TREES
81.167

CONCEPT FOR A GOBAL TOPOGRAPHIC INFORMATION SYSTEM
71.048

CONCEPT FOR THE AUTOMATIC REGISTRATION OF SATELLITE IMAGES WITH A DIGITAL MAP DATA BASE
78.101

CONCEPT MAPS
82.020

THE CONCEPT OF MAP INFORMATION AS A MALLEABLE, USER-ORIENTED COMMODITY
83.001

CONCEPTS AND APPROACHES TO LAND INFORMATION MANAGEMENT
83.229

CONCEPTS OF A MULTI-PURPOSE CADASTRE: PROBLEMS OF DESIGN AND IMPLEMENTATION
76.045

CONCEPTS OF COMPUTER MAPPING AT THE FOREST MANAGEMENT INSTITUTE
75.147

CONCEPTS OF DATA STRUCTURE FOR DIGITAL TERRAIN MODELS
78.110

CONCEPTS OF MODERN CADASTRE. OTTAWA, ONT.
75.283

CONCEPTS OF SPACE AS A GUIDE TO CARTOGRAPHIC DATA STRUCTURES
78.034

CONCEPTS REPORT FOR POLARIS: PROVINCE OF ONTARIO LAND REGISTRATION INFORMATION SYSTEM
75.192

CONCEPTS, OBJECTIVES AND STRUCTURE OF THE CANADA SOIL INFORMATION SYSTEMS
75.077

CONCEPTUAL DESIGN OF AN AUTOMATED MAPPING SATELLITE SYSTEM (MAPSAT)
81.044

TITLE INDEX

CONCEPTUAL FRAMEWORKS AND A UNIFIED APPROACH TO ENVIRONMENTAL STATISTICS
79.077

A CONCEPTUAL MODEL OF RASTER GRAPHICS SYSTEMS
82.283

CONCEPTUAL SYSTEM DESIGN FOR AN ENVIRONMENTAL INFORMATION BASE FOR MANAGEMENT OF WATER AND RELATED RESOURCES BY STATES
73.104

CONFERENCES CAN BE CATALYSTS
71.050

CONGRUENCE BETWEEN U.S. CENSUS DIME TECHNOLOGY AND OBSERVED LOCAL OPERATING AGENCY GEOGRAPHIC INTERESTS AND NEEDS
75.018

THE CONICAL SCANNER EVALUATI[illegible] SYSTEM DESIGN
82.120

CONRIM NEWSLETTER (COMMITTEE ON NATURAL RESOURCE INFORMATION MANAGEMENT)
83.214

CONSEQUENCE ANALYSIS OF LAND DATA SYSTEMS
77.020

CONSISTENT OPERATIONS ON A SPATIAL DATA STRUCTURE
82.241

CONSOLIDATED PROPERTY FILE FEASIBILITY STUDY. FINAL REPORT
74.051

CONSTRUCTION OF A DYNAMIC MODEL OF LAND USE-LAND COVER FROM SEQUENTIAL REMOTE SENSING DATA
82.047

CONTINENTAL LAND COVER CLASSIFICATION USING METEOROLOGICAL SATELLITE DATA
83.012

CONTINGENCY PLANNING WITH AERIAL PHOTOGRAPHY AND GEOGRAPHIC INFORMATION SYSTEMS
84.001

CONTINUING PHASE URBAN DATA SYSTEMS
70.039

CONTINUOUS AND INSTANTANEOUS UPDATING OF A LAND DATA SYSTEM
75.103

CONTINUOUS UPDATING: AN ESSENTIAL REQUIREMENT OF A MODERN CADASTRE
75.089

A CONTOUR SPECIFIC INTERPOLATION ALGORITHM FOR DEM GENERATION
82.261

CONTOURING ALGORITHMS
75.066

CONTOURING AND THE CONTOUR MAP: A NEW PERSPECTIVE
75.274

CONTRIBUTION OF GEODETIC CONTROL TO BETTER LAND IDENTIFIERS
73.108

CONVERSATIONS WITH ODYSSEY
83.101

CONVERSION OF RASTER CODED IMAGES TO POLYGONAL DATA STRUCTURES
81.188

CONVERSION OF THE CONVEYANCE SYSTEM INTO A LAND RECORD SYSTEM
75.272

COORDINATES AND ALBERTA
75.237

COORDINATES VERSUS CONFUSION
70.024

COORDINATION OF LAND-RELATED INFORMATION IN ALBERTA
75.238

CORRECTION, UPDATE AND EXTENSION (CUE) OF THE CENSUS BUREAU'S GEOGRAPHIC BASE (DIME) FILE
72.068

CORRECTIONS APPLIED BY THE NATIONAL GEODETIC SURVEY TO PRECISE LEVELING OBSERVATIONS
82.032

CORRELATING MICROFILM MINE MAPS WITH TOPOGRAPHIC MAPS
77.225

CORRELATION OF VIEW AND HOUSING VALUES USING GEOCODED BUILDING PERMIT DATA
77.123

COST AND BENEFIT CONSIDERATIONS CONCERNING COMPUTER-AIDED CARTOGRAPHIC SYSTEMS
75.187

COST OF TOPOLOGICAL FILE ACCESS
77.240

COST-BENEFIT ASPECTS IN ESTABLISHING THE DIFFERENT PHASES OF A LAND INFORMTION SYSTEM
78.133

COST-EFFECTIVE APPLICATIONS OF COMPUTER GRAPHICS
73.058

COST-OF LAND RECORDS IN WISCONSIN
79.070

COUNCIL REDISTRICTING SAN JOSE: AN INTERACTIVE GRAPHICS APPROACH
82.197

COUNTY BOUNDARY COORDINATE FILE FOR GRAPHIC DISPLAY OF DATA
74.042

COUNTY CADASTRES AND COMPATIBLE PARCEL IDENTIFIERS: NEEDS AND COSTS
73.096

CRAIGES (CARTOGRAPHIC REPRODUCTION AND INTERACTIVE GRAPHICS EDITING SYSTEM): USERS' MANUAL
82.256

THE CRC TOPOGRAPHIC DATA
82.134

CREAL (COMPUTERIZED REAL ASSESSMENT AND LAND RECORDS) SYSTEM DESIGN MANUAL. 7 VOLUMES
77.195

CREAL, A SYSTEM FOR COMPUTERIZING REAL ESTAGE AND LAND RECORDS SYSTEM. PHASE 1 EXTENSION. PART 1 PROJECT MANAGEMENT REPORT. VOLUME 1 PART 2 APPENDICES. VOLUME 2
77.138

CREATION OF A ROAD DATABASE FROM MAP OVERLAYS
82.015

CREATION OF GEOCODING FILES, AREA RETRIEVAL AND MAPPING IN URBAN DATA MANAGEMENT
72.100

CREATION OF LEGAL BASE MAPS BY COMPUTER GRAPHICS AT THE CITY OF CALGARY
82.195

CRIB - THE MINERAL RESOURCES DATA BANK OF THE U.S. GEOLOGICAL SURVEY
73.028

CROP PRODUCTION POTENTIALS FOR LAND EVALUATION IN CANADA
81.046

CROPP
72.021

CROPP: CONFORMAL REPRESENTATION OF THE PRAIRIE PROVINCES
73.057

CURRENT METHODOLOGIES FOR DETERMINING THE SPATIAL DISTRIBUTION OF AIR POLLUTING EMISSIONS
74.147 74.090

C3I DATA BASE AND NETWORKING ANALYSIS
82.133

DATA BANK FOR GEOLOGIC FIELD WORK (GEOBANK) AND EXTENSION
78.035

DATA BANKS
71.055

DATA BASE AND INFORMATION SYSTEM RESEARCH AND DEVELOPMENT IN CANADA: PROBLEMS AND ROLES
73.074

DATA BASE DEVELOPMENT
72.092

DATA BASE DEVELOPMENT AND MONITORING FOR ENERGY CONVERSION AND CONSERVATION IN WEST VIRIGINA PUBLIC BUILDINGS
78.067

DATA BASE DEVELOPMENT FOR NATIONAL WETLANDS INVENTORY
78.021

DATA BASE FOR GEOGRAPHIC REFERENCING IN A LAND DATA SYSTEM
77.254

DATA BASE FOR GEOMAP INDEX
76.073

DATA BASE FOR MINERAL POTENTIAL ESTIMATION IN THE APPALACHIAN REGION OF CANADA
75.082

DATA BASE FOR ZONING, SUBDIVISION CONTROL AND PERMIT RECORDS
76.012

DATA BASE MANAGEMENT SYSTEM APPROACHES TO HANDLING CARTOGRAPHIC DATA
79.130

TITLE INDEX

A DATA BASE MANAGEMENT SYSTEM FOR IMAGE PROCESSING
82.263

DATA BASE MANIPULATION FOR ASSESSMENT OF MULTIRESOURCE SUITABILITY AND LAND CHANGES
81.077

DATA BASE REQUIREMENTS IN SUPPORT OF CROP MODELS
81.045

DATA BASE SIZING METHODOLOGY APPLIED TO THE ARMY TERRAIN INFORMATION SYSTEM (ARTINS)
78.126

DATA BASE SUPPORT AND INTERACTIVE GRAPHICS
77.164

DATA BASE UPDATING BY DIGITAL MONO-PLOTTING
82.228

DATA BASE-ORIENTED PLANNING SYSTEMS - NEW CHALLENGES AND OPPORTUNITIES IN THE MINERAL INDUSTRY
77.237

DATA BASES AS INFORMANTS: AN INDUSTRIAL FOREST EXAMPLE
79.104

DATA BASES FOR GEOGRAPHIC FACILITY DESIGN AND ANALYSIS
78.159

DATA CAPTURE IN THE CONSTRUCTION OF MINDEP'S COMPUTER-BASED MINERAL DEPOSITS FILES
75.163

DATA COLLECTION BY REMOTE SENSING
72.093

DATA DELINEATION AND COMPUTER TECHNIQUES FOR LINE PRINTER MAPPING AND TABULATION
77.061

DATA DICITAL ELEVATION MODEL COLLECTION SYSTEMS
78.026

DATA DISPLAY AND PRESENTATION
70.050

DATA EDITING
79.101

DATA FILES FOR COMPUTERIZED CARTOGRAPHY FROM THE U.S. CENSUS BUREAU
75.047

DATA GENERALIZATION AND ATTRIBUTE CODE SCHEMES
79.131

DATA INPUT
70.008

DATA MANAGEMENT CONSIDERATIONS FOR LARGE CARTOGRAPHIC INFORMATION SYSTEMS
81.137

DATA MANAGEMENT FOR A METROPLEX
80.097

DATA MONITORING SYSTEM. LAND USE/HOUSING SURVEY. TECHNICAL GUIDE. ANNUAL REPORT. JUNE 72-JUNE 73
73.032

DATA MONITORING SYSTEM. LAND USE/HOUSING SURVEY. UPDATE PROCEDURES. REPORT FOR JUNE 1972-JUNE 1973
73.033

DATA MONITORING SYSTEM. SMALL AREA PROFILES FOR THE CHAMPAIGN-URBANA URBAN AREA. FINAL REPORT
73.034

DATA NEEDS AND DATA GATHERING FOR AREAS OF CRITICAL ENVIRONMENTAL CONCERN. PART 3: EXECUTIVE STATEMENT
75.139

DATA NEEDS AND DATA MANIPULATION (FACULTY LAND USE PROBLEM DEFINITION SEMINAR)
72.063

DATA ON 80,000 RESERVOIRS NOW AVAILABLE TO INDUSTRY
78.189

DATA REGISTRATION, THEORETICAL ANALYSIS OF BASIC CONCEPTS
71.052

DATA SHARING THOUGH ADLIB: AN ORGANIZATIONAL MODEL
82.199

DATA SOURCE AND INFORMATION CARRIER AS A BASE FOR A SPATIAL-ORIENTATED INFORMATION SYSTEM
82.017

TITLE INDEX

DATA STANDARDIZATION IN GEOLOGY
72.083

DATA STORAGE AND RETRIEVAL
77.152

DATA STRUCTURE AND LANGUAGE OF THE GEOGRAPHIC INFORMATION SYSTEM ATLAS
81.067

DATA STRUCTURE CONSIDERATIONS IN TOPOGRAPHIC MAPPING
82.321

A DATA STRUCTURE FOR RESOURCE MAPPING WITH CARIS
83.173

DATA SYSTEMS FOR WATER RESOURCES MANAGEMENT
82.167

DATA USE AND MANIPULATION
70.030

DATA USES IN URBAN PLANNING
70.053

DATA-BASE MANAGEMENT SYSTEM FOR ENVIRONMENTAL GEOLOGICAL DATA IN CZECHOSLOVAKIA
75.118

DATA-BASE MANAGEMENT SYSTEM FOR SPATIAL DISPLAY OF FEDERAL OFFSHORE OIL AND GAS LEASE DATA
78.140

DATABASE HAS BEEN DEVELOPED TO AID WATER SUPPLIERS
83.074

DATABASE MANAGEMENT: A FORESTRY INVENTORY APPLICATION
81.095

DEALING WITH REGIONAL HYDROLOGIC DATA-BASE LIMITATIONS. CASE EXAMPLE: THE COLUMBIA RIVER BASALTS
81.092

DECISION DAY FOR AUTOMATING
76.126

DECISION SUPPORT SYSTEMS FOR POLICY AND MANAGEMENT
83.160 83.159 83.158 83.157 83.156 83.155
83.154 83.153 83.152 83.151 83.150 83.149
83.148 83.147 83.146 83.145 83.144 83.143
83.142 83.141 83.140

DECISION TREES AND DIAGRAMS
82.303

DEFENSE MAPPING AGENCY AUTOMATED CARTOGRAPHIC SYSTEMS
75.181

DEFENSE MAPPING AGENCY DIGITAL DATA BASE EVOLUTION
81.091

DEMONSTRATION OF A CURRENT LAND DATA SYSTEM BASED ON RECORDATION OF OWNERSHIP OF PARCELS
75.020

DEMONSTRATION OF THE USE OF THE GRID SYSTEM UTILIZING MULTI-SOURCE INPUTS. TECHNICAL REPORT
71.056

A DEMONSTRATION TRANSFER OF REMOTELY SENSED DATA UTILIZING THE STANDARD FORMAT FOR THE TRANSFER OF GEOCODED POLYGON DATA
83.131

DESCRIPTION AND USE OF A PROPOSED GEOGRAPHICALLY-BASED ENVIRONMENTAL DATA SYSTEM. FINAL REPORT
74.029

THE DESIGN & IMPLEMENTATION OF COMPUTER-BASED GEOGRAPHIC INFORMATION SYSTEMS
82.326 82.325 82.324 82.323 82.322 82.321
82.161 82.154

DESIGN AND CODING CONSIDERATIONS OF THE SOIL DATA LANGUAGE INTERPRETER
83.064

DESIGN AND EVALUATION OF AN INTERACTIVE GEO-DATA ANALYSIS AND DISPLAY SYSTEM
74.025

DESIGN AND IMPLEMENTATION OF COMPUTER BASED INFORMATION SYSTEMS
82.317

DESIGN AND STRUCTURE OF GEOLOGICAL DATA BANKS FOR REGIONAL MINERAL POTENTIAL EVALUATION
75.083

DESIGN AND USE OF THE NEW LINMAP-COLMAP SYSTEM
75.094

DESIGN CONCEPTS AND RECOMMENDATIONS. VOL. 2
79.171

DESIGN CONCEPTS FOR A PLANNING COMMISSION INFORMATION SYSTEM
70.010

TITLE INDEX

DESIGN CONCEPTS FOR THE NORTH CAROLINA PLANNING AND LAND USE MANAGEMENT INFORMATION SYSTEM. FINAL REPORT
74.110

DESIGN CONSIDERATIONS FOR AN EXPERIMENTAL COMPUTER AIDED MAPPING SYSTEM
74.066

DESIGN CONSIDERATIONS FOR COMPUTER-BASED INTERACTIVE MAP DISPLAY SYSTEMS. FINAL REPORT
79.003

DESIGN CONSIDERATIONS FOR GEOPROCESSING SYSTEMS IN LIGHT OF CURRENT TECHNOLOGY
78.014

DESIGN FOR COAL SUPPLY ANALYSIS SYSTEM. FINAL REPORT
79.038

DESIGN FOR POLYGON OVERLAY
78.172

DESIGN ISSUES FOR URBAN AND REGIONAL INFORMATION SYSTEMS
72.117

THE DESIGN OF A MULTIMEDIA MAP-STORE/SURROGATE TRAVEL INFORMATION SYSTEM
81.022

DESIGN OF A REGIONAL GEOCODED DATA SYSTEM
75.215

DESIGN OF A TELIDON BASED IMAGE ANALYSIS SYSTEM (TELIAS)
83.104

DESIGN OF GEOLOGICAL DATA SYSTEMS FOR DEVELOPING NATIONS
77.104

THE DESIGN OF INTERACTIVE SYSTEMS FOR THE CREATION OF PRECISION GRAPHIC PRIMITIVES
83.136

DESIGN PRINCIPLES AND AUTOMATED CHOROPLETH MAPPING
80.014

DESIGN REQUIREMENTS FOR A PROGRAM TO PROCESS LOCATIONAL, STREET-ADDRESS-BASED DESCRIPTIONS
81.148

DESIGN SPECIFICATIONS FOR GEOGRAPHIC BASE MAINTENANCE MODULE
74.030

DESIGN STRATEGIES FOR CONTINUOUS-TONE AREA MAPPING
79.027

DESIGNING INTERACTIVE CARTOGRAPHIC SYSTEMS USING THE CONCEPTS OF REAL AND VIRTUAL MAPS
83.103

DETECTION OF SURFACE SPECIFIC POINTS BY LOCAL PARALLEL PROCESSING OF DISCRETE TERRAIN ELEVATION DATA
75.184

DETERMINING FUTURE NEEDS THROUGH FISCAL ANALYSIS
80.102

DEVELOPING A COMPUTERIZED IMPACT ZONING SYSTEM
75.032

DEVELOPING A COUNTY LAND RECORDS MANAGEMENT SYSTEM
83.148

DEVELOPING A LOW COST, HIGH TECHNOLOGY GEOGRAPHIC INFORMATION SYSTEM
78.049

DEVELOPING AND USING A GEOGRAPHIC INFORMATION SYSTEM FOR HANDLING AND ANALYZING LAND RESOURCE DATA
77.007

DEVELOPING COMPUTER-GRAPHICS PROGRAMS FOR SPECIALIZED APPLICATIONS
83.073

DEVELOPING GEOGRAPHIC-BASED INFORMATION FILES: A BIBLIOGRAPHIC ESSAY. FINAL REPORT
76.139

DEVELOPING INTERACTIVE COMPUTER GRAPHICS FOR GEOGRAPHIC INFORMATION
75.171

DEVELOPING THE CLASS CODE STRUCTURE FOR AN EXTENSIVE GEOGRAPHIC DATA FILE
82.192

DEVELOPMENT & IMPLEMENTATION OF A COMPUTERIZED SYSTEM TO STORE RESOURCE INFORMATION, AVALANCHE DATA, TERRAIN MAPPING AND FIRE DATA MAPPING FOR THE KANANASKIS PROVINCIAL PARK
82.313

TITLE INDEX

DEVELOPMENT AND APPLICATION OF A COMMUNITY PROFILE ON A NATIONAL SCALE
77.199

DEVELOPMENT AND APPLICATION OF A PERMIT INFORMATION SYSTEM FOR SHALE OIL (PERMISSO). FINAL REPORT, JUNE 1978 - MAY 1979
79.186

DEVELOPMENT AND APPLICATION OF AN IMAGE ANALYZING AND PROCESSING SYSTEM
82.007

DEVELOPMENT AND APPLICATION OF AN ON-LINE MINI COMPUTER/STEREOPLOTTER SYSTEM
74.142

DEVELOPMENT AND APPLICATION OF 1975 LAND USE DATA
78.139

DEVELOPMENT AND APPLICATIONS OF THE SOUTH CAROLINA COMPUTURIZED LAND USE INFORMATION SYSTEM (CLUIS)
76.056

DEVELOPMENT AND IMPLEMENTATION OF A LOW COST MICRO COMPUTER SYSTEM FOR LANDSAT ANALYSIS AND GEOGRAPHIC DATA BASE APPLICATIONS
80.041

DEVELOPMENT AND SERVICING OF SPATIAL DATA MANAGEMENT TECHNIQUES IN THE CORPS OF ENGINEERS
79.209

DEVELOPMENT AND TESTING OF LANDSAT-ASSISTED PROCEDURES FOR COST-EFFECTIVE FOREST MANAGEMENT
83.088

DEVELOPMENT AND USE OF THE ONTARIO WELL DATA SYSTEM
70.026

DEVELOPMENT OF A COMPUTER-BASED CONSULTANT FOR MINERAL EXPLORATION. ANNUAL REPORT 1 OCT. 76 - 30 SEPT. 77
77.080

DEVELOPMENT OF A COMPUTER-BASED FILE ON OIL AND GAS POOLS
74.043

DEVELOPMENT OF A DATA MANAGEMENT FRONT END FOR USE WITH A LANDSAT BASED INFORMATION SYSTEM
82.115

DEVELOPMENT OF A DATA SYSTEMS TECHNOLOGY FOR ASSESSING THE GEOGRAPHIC DISTRIBUTION OF URBAN GOVERNMENT SERVICES
77.079

DEVELOPMENT OF A GEOGRAPHIC INFORMATION SYSTEM FOR AUTOMATED REAL ESTATE ASSESSMENT
77.245

DEVELOPMENT OF A GRIDDED DATA BASE. APPENDIX A. THE 3DNEPH DATA BASE. APPENDIX B. ANALYSIS DATA BASE SUMMARY. APPENDIX C. THE USEFULNESS OF THE GRIDDED CONVENTIONAL DATA BASE FOR CLIMATIC APPLICATION
74.055

DEVELOPMENT OF A LAND TENURE INSTITUTE: ORGANIZATION, PRIORITIES, COMMUNICATION AND PARTICIPATION
76.079

DEVELOPMENT OF A MICROCOMPUTER URBAN INFORMATION SYSTEM UNIT IN COLOMBO, SRI LANKA
82.188

DEVELOPMENT OF A MOTOR VEHICLE ACCIDENT RECORDS SYSTEM
75.065

DEVELOPMENT OF A NATURAL RESOURCE INFORMATION SYSTEM. VOLUMES 1-5
73.110

DEVELOPMENT OF A PLANNING INFORMATION SYSTEM FOR WISCONSIN STATE GOVERNMENT
70.021

DEVELOPMENT OF A REMOTE SENSING-AIDED DIGITAL DATABANK FOR LARGE SCALE LAND USE PLANNING
82.008

DEVELOPMENT OF A SYSTEM FOR FLOOD RISK MAPPING USING PHOTOGRAMMETRY AND ELECTRONIC DIGITAL DATA PROCESSING
75.084

DEVELOPMENT OF AN EARTH RESOURCES INFORMATION SYSTEM USING AERIAL PHOTOGRAPHS AND DIGITAL COMPUTERS
71.003

DEVELOPMENT OF AN ENVIRONMENTAL GEOLOGY DATA BASE FOR LAND USE PLANNING.
82.084

DEVELOPMENT OF AN INFORMATION DATA BASE FOR WATERSHED MONITORING
80.096

DEVELOPMENT OF AN INTEGRATED MUNICIPAL INFORMATION SYSTEM. PHYSICAL AND ECONOMIC DEVELOPMENT SUBSYSTEM. GEOCODING TECHNOLOGY STUDY
70.016

DEVELOPMENT OF AN URBAN INFORMATION SYSTEM: THE ANN ARBOR EXPERIENCE
78.015

DEVELOPMENT OF AUTOMATED GEOLOGICALLY-BASED INVENTORIES OF MINERAL AND FUEL RESOURCES IN CANADA
70.011

DEVELOPMENT OF DTM TECHNIQUES
80.005

DEVELOPMENT OF GEOGRAPHIC INFORMATION HANDLING CAPABILITIES: WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES
83.193

DEVELOPMENT OF LEGISLATION TO SUPPORT A COMPUTERIZED LAND TRANSFER SYSTEM
76.097

DEVELOPMENT OF MULTI-PURPOSE LAND INFORMATION SYSTEMS: THE CHALLENGE FOR THE NEXT DECADE
80.075

THE DEVELOPMENT OF MULTIPURPOSE LAND INFORMATION SYSTEMS: A CANADIAN PERSPECTIVE
82.315

THE DEVELOPMENT OF SMALL SCALE MAP CONTROL VIA DIGITAL PANELING OF LARGE SCALE MAP SOURCE
82.044

THE DEVELOPMENT OF STANDARDS FOR MULTIPURPOSE CADASTRAL SYSTEMS: SOME RECENT INITIATIVES
82.314

DEVELOPMENT OF THE ONTARIO CO-ORDINATE AND ITS RELATIONSHIP TO URBAN DATA BANKS AND DATA MANAGEMENT PROGRAMMES
75.195

DEVELOPMENT OF THE SAN JOSE GEOGRAPHIC/MAPPING INFORMATION SYSTEM
83.152

DEVELOPMENT OF 3-DIMENSIONAL SPATIAL DISPLAYS USING A GEOGRAPHICALLY BASED INFORMATION-SYSTEM (EN)
82.077

DIALOGUE CELLS: A METHOD FOR DEFINING INTERACTIONS.
82.082

DIDAK - A DIGITAL IMAGE PROCESSING SYSTEM
77.243

DIGICART DATA PROCESSING SYSTEM AND ITS APPLICABILITY TO SURVEYING AND MAPPING
76.018

DIGIT SERIES: INTERACTIVE DIGITIZING FOR EDUCATION AND RESEARCH
77.090

DIGIT: ADVANCED INTERACTIVE DIGITIZATION PROGRAMME
74.018

DIGITAL ANALYSIS OF LANDSAT DATA IN THE ATHABASCA DELTA
82.226

DIGITAL CARTOGRAPHIC DATA BASE
75.081

DIGITAL CARTOGRAPHIC DATA BASE FOR LAND USE AND LAND COVER AND ASSOCIATED MAPS
79.084

DIGITAL CARTOGRAPHIC DATA PRODUCTION USING RASTER SCANNING TECHNIQUES
83.195

DIGITAL CARTOGRAPHIC FILES AVAILABLE FROM THE CENSUS BUREAU
80.095

A DIGITAL CARTOGRAPHIC INFORMATION UTILITY
83.174

DIGITAL CARTOGRAPHIC MANAGEMENT SYSTEMS
75.144

DIGITAL CARTOGRAPHIC MODELLING TECHNIQUES IN ENVIRONMENTAL PLANNING
82.295

DIGITAL CARTOGRAPHY IN THE U.S. GEOLOGICAL SURVEY
82.266

DIGITAL DATA BASE FOR BRITISH LOCAL AUTHORITY BOUNDARIES
77.018

A DIGITAL DATA BASE FOR THE NATIONAL PETROLEUM RESERVE IN ALASKA
82.178

TITLE INDEX

DIGITAL DATA BASES - THE WAVE OF THE FUTURE
78.132

DIGITAL DATA EDITING SYSTEM. FINAL REPORT - 26 FEB., 1976 - 25 FEB., 1977
77.117

DIGITAL GEOGRAPHIC DATA HANDLING ACTIVITIES IN THE U.S. GEOLOGICAL SURVEY
76.087

DIGITAL GEOREFERENCED DATA BASES
80.067

DIGITAL GROUND MODELS: ACCOUNT OF RECENT RESEARCH
72.047

DIGITAL HARDWARE: MASS DIGITIZATION
79.020

DIGITAL HARDWARE: MASS STORAGE
79.021

DIGITAL HEIGHT MODELS IN FOREST MAPPING
82.262

DIGITAL IMAGE RECONSTRUCTION AND RESAMPLING FOR GEOMETRIC MANIPULATION
75.216

DIGITAL IMAGE TECHNOLOGY: CARTOGRAPHIC SYSTEMS AT THE DEFENSE MAPPING AGENCY AEROSPACE CENTER
81.103

DIGITAL MAP GENERALIZATION AND PRODUCTION TECHNIQUES
82.172

DIGITAL MAP REVISION
78.111 78.009

DIGITAL MAPPING AND AUTOMATED CARTOGRAPHY SYSTEM OF THE DEPARTMENT OF ENERGY, MINES AND RESOURCES
78.183

DIGITAL MAPPING AND DIGITAL IMAGE PROCESSING
74.057

DIGITAL MAPPING IN THE ORDNANCE SURVEY
78.158

DIGITAL ORTHOPHOTO STUDY. FINAL TECHNICAL REPORT NOV. 74-MAY 75
75.177

DIGITAL PICTURE PROCESSING
82.269

DIGITAL PROCESSING OF RADAR AND SATELLITE IMAGES
82.157

DIGITAL RECTIFICATION OF OBLIQUE PHOTOGRAPHY IN COASTAL MAPPING
78.120

A DIGITAL TECHNIQUE FOR CONSTRUCTING VARIABLE-WIDTH LINES
82.162 82.144 82.043

DIGITAL TECHNIQUES FOR MAP REVISION AND CHECKING DIGITIZED DATA. TECHNICAL REPORT
77.163

DIGITAL TECHNIQUES FOR THE INTEGRATION AND DISPLAY OF MULTISOURCE DATA
82.221

DIGITAL TERRAIN ANALYSIS
82.210

DIGITAL TERRAIN ANALYSIS STATION (DTAS)
82.028

DIGITAL TERRAIN MODEL: A TOOL FOR QUANTIFYING TERRAIN CHARACTERISTICS
78.080

DIGITAL TERRAIN MODELS AND REMOTE SENSING
80.048

DIGITAL TOPOGRAPHIC INFORMATION BANK
75.061

DIGITAL TOPOGRAPHIC MAP PRODUCTION
80.003

DIGITALLY CONTROLLED PRODUCTION OF ORTHOPHOTOS AND STEREO-ORTHOPHOTOS
78.100

DIGITISING AND EDITING TECHNIQUES
71.031

DIGITIZATION AND PROCESSING OF LARGE REGIONAL GEOLOGICAL MAPS
81.115

DIGITIZATION OF TRANSPORTATION NETWORKS USING GBF/DIME FILE COORDINATES
81.149

DIGITIZING GEOGRAPHIC DATA WITH GRIDOT-A GENERALIZED PROGRAM FOR DRAWING OVERLAY GRIDS IN VARIOUS MAP PROJECTIONS
76.065

TITLE INDEX

DIME CONCEPT APPLICATION IN EUROPE: A GERMAN EXPERIENCE
71.038

DIME GEOCODING SYSTEM
70.054

DIME-BASED SYSTEM FOR PLANNING AND ANALYSIS
75.132

DIMECNV: A SYSTEM FOR CONVERTING SCANNER-DIGITIZED MAPPING DATA TAPES TO POLYGON FORMAT
76.067

DIRECTORY OF COMPUTER SOFTWARE APPLICATIONS - NATURAL RESOURCES AND EARTH SCIENCE. 1970 - DEC. 1978
78.124

A DIRECTORY OF COMPUTER SOFTWARE APPLICATIONS. NATURAL RESOURCES AND EARTH SCIENCES
81.042

DIRECTORY OF DATA SOURCES: STATE AGENCIES. FINAL REPORT
72.102

DIRECTORY OF ENVIRONMENTAL ASSET DATA BASES AND VALUATION STUDIES
82.155

DIRECTORY OF INDIVIDUALS IN THE FIELD OF GEOGRAPHICAL DATA HANDLING
79.108

DIRECTORY OF LAND RELATED SOURCES: STATE AGENCIES
73.049

DISCOVERING AND EVALUATING SOFTWARE
79.132

DISCUSSION OF THE SYMAP PROGRAM
79.188

DISPLAY AND ANALYSIS OF SPATIAL DATA
75.278 75.277 75.266 75.241 75.233 75.226
75.225 75.209 75.208 75.186 75.183 75.175
75.119 75.094 75.067 75.062

DISPLAY OF POPULATION CENSUS DATA
80.089

DISPLAY TECHNIQUES FACILITATING RESEARCH IN METROPOLITAN AREAS: EXAMPLES FROM A CASE STUDY OF THE ASSOCIATION BETWEEN CRIME AND ITS PROXIMITY TO "ON-SALE" LIQUOR ESTABLISHMENTS
79.073

DISTRIBUTION AND LICENSING OF THE LABORATORY FOR COMPUTER GRAPHICS AND SPATIAL ANALYSIS SOFTWARE: AN ODYSSEY CASE STUDY
79.159

DISTRIBUTIVE PROCESSING APPLIED TO CARTOGRAPHIC PRODUCTION SYSTEMS
77.026

DOT NATIONAL COUNTY COMPONENT CONVENTER FILE: PROSPECTS, PROBLEMS, FEASIBILITY. FINAL REPORT DEC. 73 - APR. 74
74.131

DOT.MAP PROGRAM SUMMARY AND PORTFOLIO
79.067

DRAFT SUMMARY OF THE REPORT ENTITLED ENVIRONMENTAL IMPACT ASSESSMENT IN CANADA: AN ECOLOGICAL PERSPECTIVE
82.243

DRAWING OF TOPOGRAPHICAL MAPS WITH BASIC CARTOGRAPHIC SUBROUTINES
78.181

DTM'S APPLICATION IN TOPOGRAPHIC MAPPING
78.002

DUPLICATIVE FEDERAL COMPUTER-MAPPING PROGRAMS: A GROWING PROBLEM
82.054

EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES
83.048 83.039 82.058

EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES ISSUE 37
83.046

EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES, ISSUE 35
82.052

EARTHQUAKE HAZARDS MAPPING IN THE SAN FRANCISCO BAY REGION
80.113

ECOLOGICAL LAND SURVEY AND THE CANADA LAND DATA SYSTEM. PROCEEDINGS OF A WORKSHOP, JAN. 10 1979
79.212

ECOLOGICAL LAND SURVEY GUIDELINES FOR ENVIRONMENTAL IMPACT ANALYSIS
81.203

TITLE INDEX

ECOLOGICAL MAPPING AND SOCIO-ECONOMIC STATISTICS
78.065

THE ECOLOGICAL MAPPING OF THE EUROPEAN COMMUNITY
82.075

ECONOMIC CONSIDERATIONS IN THE DEVELOPMENT OF MODERN CADASTRAL SYSTEMS
76.104

ECONOMIC EVALUATION AND MONITORING OF CADASTRAL SYSTEMS
76.105

ECONOMIC MODELING OF OPTIMUM ENERGY FACILITIES LOCATIONS
80.085

ECONOMIC REQUIREMENTS
79.068

ECONOMICS STUDY OF THE DEMAND FOR, AND GAINS ASSOCIATED WITH, THE ATLANTIC PROVINCES CO-ORDINATE CONTROL, MAPPING, LAND TITLE, AND DATA BANK PROGRAMME
71.046

ECONOMY IN LOW VOLUME LAND INFORMATION SYSTEMS: HOW TO SET UP AND OPERATE LAND RECORDS SYSTEMS WITHOUT SPENDING A MILLION
75.275

ECOSYSTEM STABILITY AND BIOPHYSICAL LAND CLASSIFICATION TECHNIQUES.
81.119

EDITING METHODS PANEL
76.119

EDMONTON PLANNING INFORMATION SYSTEM:EPIS
70.014

EDP STANDARDS APPLIED TO DIGITAL TOPOGRAPHIC DATA
82.309

AN EFFECTIVE WAY TO REPRESENT QUADTREES
82.278

EFFECTIVENESS OF A COMPUTER LAND USE PLANNING SYSTEM FOR CORRIDOR SELECTION
77.099

EFFECTIVENESS OF A COMPUTER LAND USE PLANNING SYSTEM UTILIZING GENERALIZED DATA
75.092

EFFECTIVENESS OF AN INTERACTIVE MAP DISPLAY IN TUTORING GEOGRAPHY. SEMI-ANNUAL TECHNICAL REPORT NO. 2, 1 APR.-30 SEPT. 76
76.048

EFFECTS OF DECREASING RESOLUTION ON SPECTRAL AND SPATIAL INFORMATION CONTENT IN AN AGRICULTURAL AREA
83.037

AN EFFICIENT COMPUTER REPRESENTATION SCHEME FOR LINEAR MAP DATA
82.093

EFFICIENT HIERARCHICAL DATA STRUCTURE FOR THE U.S. HISTORICAL COUNTY BOUNDARY FILE
77.015

EFFICIENT SPATIAL ACCESS TO DATA BASE
81.002

EIGHTY THOUSAND INFORMATION SYSTEMS: THE UTILIZATION OF COMPUTING IN AMERICAN LOCAL GOVERNMENTS
82.102

EIS ESTABLISHMENT/COMPANY DATA FILE AND ITS COMPUTER GRAPHIC APPLICATION
80.009

ELECTRONIC DATA PROCESSING OPERATIONAL PLAN
82.305

ELEMENTS OF AN IMAGE-BASED INFORMATION SYSTEM
76.182

ELEMENTS OF RELIABILITY MODELING FOR ENVIRONMENTAL PLANNING SYSTEMS
83.140

ENERGY INFORMATION ACT
74.143

ENERGY INFORMATION ACT: PART I
76.186

ENERGY RESOURCES DATA SYSTEM: BASIC SYSTEM DESIGN
79.152

ENERGY RESOURCES DATA SYSTEM: IDENTIFICATION OF DEFICIENCIES AND REQUIREMENTS
77.174

ENERGY-RELATED ENVIRONMENTAL COMPUTER GRAPHICS SYSTEMS IN THE DEPARTMENT OF ENERGY LABORATORIES
78.165

TITLE INDEX

ENGINEERING EVALUATION OF AN AIDED-TRACK DIGITIZING CURSOR SYSTEM
79.106

ENGINEERING GEOLOGIC DATA FOR LAND-USE PLANNING
75.205

ENGINEERING GEOLOGY TERRAIN MAPPING - A DATA BASE FOR DIGITIZING
80.044

ENGINEERING VIEW OF CAMRAS
80.007

ENHANCEMENTS & CLASSIFICATIONS OF LANDSAT DATA FOR THE ECOLOGICAL RESOURCE SURVEY & MAPPING OF THE AISHIHIK LAKE ENVIRONMENTALLY SIGNIFICANT AREA (ESA),YK CAN.
83.122

ENVIRONMENT INFORMATION SYSTEMS. PROCEEDINGS OF THE UNESCO/IGU FIRST SYMPOSIUM ON GEOGRAPHICAL INFORMATION SYSTEMS. OTTAWA, ONT. SEPT. 28 - OCT. 2, 1970
70.051

THE ENVIRONMENTAL ADVISORY SERVICE: DESIGN & DEVELOPMENT OF A DECISION SUPPORT SYSTEM FOR LOCAL LAND USE PLANNING
83.157

ENVIRONMENTAL ANALYSIS FOR DEVELOPMENT PLANNING CHAMBERS COUNTY, TX. VOLUME I. AN APPROACH TO NATURAL ENVIRONMENTAL ANALYSIS
74.102

ENVIRONMENTAL ANALYSIS FOR DEVELOPMENT PLANNING. CHAMBERS COUNTY, TEXAS TECHNICAL REPORT. VOLUME 6. AN APPROACH FOR DESCRIBING NATURAL SYSTEMS AND FOR ASSESSING NATURAL ENVIRONMENTAL IMPACT
76.120

ENVIRONMENTAL ASSESSMENT AND RESOURCE MANAGEMENT
82.232 82.231 82.230 82.229 82.228 82.227
82.226 82.225 82.224 82.223 82.222 82.221
82.220 82.185 82.184 82.183 82.182 82.181
82.180 82.179 82.178 82.177 82.176 82.175
82.174 82.173 82.172 82.171 82.170 82.169
82.168 82.167 82.166

ENVIRONMENTAL ASSESSMENT WITH BASIS
82.185

ENVIRONMENTAL DATA CONTOURING PROGRAM EDMAP2
82.026

ENVIRONMENTAL DATABASES FOR MANAGEMENT DECISIONS: ALASKA
81.155

ENVIRONMENTAL DESIGN ALIGNMENT PROCESS (EDAP): THE APPLICATION OF COMPUTER ASSISTED TECHNIQUE IN ENERGY TRANSMISSION CORRIDOR PLANNING
73.101

ENVIRONMENTAL EARLY WARNING SYSTEM (EEWS): CONCEPT DESCRIPTION
83.091

ENVIRONMENTAL INFORMATION MANAGEMENT IN THE ENERGY RESOURCE INDUSTRY
83.220

THE ENVIRONMENTAL INFORMATION NEEDS OF THE DECISION-MAKER
82.244

ENVIRONMENTAL MANAGEMENT DECISION ASSISTANCE SYSTEM FOR LOCAL GOVERNMENT
77.200

ENVIRONMENTAL STUDIES DATA-BASE FEASIBILITY PROJECT
82.132

ENVIRONMENTAL TECHNICAL INFORMATION SYSTEM: A DECISION SUPPORT SYSTEM
83.158

EPAMS: ENVIRONMENTAL PLANNING AND MANAGEMENT SYSTEM - BASIC ELEMENTS
77.133

EPPL: AN INNOVATIVE GRID GEOGRAPHIC INFORMATION SYSTEM LANGUAGE
83.118

EQUIPMENT FOR SPATIAL DATA PROCESSING
72.017

AN ERROR ANALYSIS TECHNIQUE FOR STATISTICAL HYPOTHESIS TESTING. GENERATION OF JOINTLY DISTRIBUTED RANDOM VARIATES
81.183

ERROR DETECTION AND RECTIFICATION IN DIGITAL TERRAIN MODELS
79.087

ERTS-BASED LAND RESOURCE INVENTORY FOR MEXICAN NATIONAL WATER STUDY
74.072

ERTS-1 ROLE IN LAND MANAGEMENT AND PLANNING IN MINNESOTA
73.119

TITLE INDEX

ERU MAPPING SYSTEM
77.119

ESSAY ON THE MINIMUM REQUIREMENTS OF A GEOGRAPHIC INFORMATION SYSTEM
72.001 71.001

ESSENTIAL PARTS OF A GEOGRAPHIC INFORMATION SYSTEM. CHAPTER TWO
76.154

ESTABLISHING A NATIONAL ORE DATA FILE IN FINLAND
77.101

ESTABLISHING A NATIONAL PROGRAM FOR URBAN GEOCODING
76.137 75.223

ESTABLISHING THE LAND USE DATA BASE
77.218

ESTABLISHMENT - BASED DATA FOR THE STUDY OF INTRA-URBAN AND SUB-REGIONAL CHANGE. THE MANCHESTER DATA BANK
77.148

ESTABLISHMENT OF CALIBRATION BASE LINES (REVISED)
82.033

AN ESTIMATION - THEORETIC APPROACH TO TERRAIN IMAGE SEGMENTATION
83.205

ESTIMATION FROM GRID DATA: THE MAP AS A STOCHASTIC PROCESS
77.108

EVALUATING COMPUTERIZED GEOGRAPHIC INFORMATION-SYSTEMS USING DECISION-ANALYSIS
81.049

EVALUATING DIDS IN A STATE GOVERNMENT ENVIRONMENT
80.029

EVALUATING THE LAND
81.110

EVALUATION AND IMPROVEMENT OF THE GEOGRAPHIC INFORMATION SYSTEMS DESIGN MODEL
81.161

EVALUATION AND USE OF DATA SOURCES IN THE STUDY OF RESIDENTIAL LAND MARKETS
74.023

EVALUATION OF A SINGLE COMPUTERIZED SYSTEM OF LAND ASSESSMENT AND ITS JOINT DEVELOPMENT BY NEW BRUNSWICK, NOVA SCOTIA AND PRINCE EDWARD ISLAND
76.142

EVALUATION OF APPLICATIONS IN THE UNITED KINGDOM
76.014

EVALUATION OF FIELD TECHNIQUES FOR TOPOGRAPHIC MAPPING
79.116

AN EVALUATION OF LANDSAT DATA FOR INPUT TO A STATE GEOGRAPHIC INFORMATION SYSTEM
82.222

EVALUATION OF LANDSAT-4 TM AND MSS GROUND GEOMETRY PERFORMANCE WITHOUT GROUND CONTROL
83.041

EVALUATION OF MAP SYMBOLS FOR A COMPUTER GENERATED TOPOGRAPHIC DISPLAY: TRANSFER OF TRAINING, SYMBOL CONFUSION, AND ASSOCIATION VALUE STUDIES
82.107

EVALUATION OF PACFORNET (PACIFIC COAST FOREST RESEARCH INFORMATION NETWORKS). FINAL REPORT
77.042

EVALUATION OF SCENE ANALYSIS ALGORITHMS
83.044

EVALUATION OF SLAR AND THEMATIC MAPPER MSS DATA FOR (FOREST COVER MAPPING) USING COMPUTER-AIDED ANALYSIS TECHNIQUES
81.073

AN EVALUATION OF THE CITY OF MILWAUKEE AUTOMATED GEOGRAPHIC INFORMATION AND CARTOGRAPHIC SYSTEM IN RETROSPECT
82.301

EVALUATION OF THE GIMMS COMPUTER MAPPING PROGRAMME
77.238

EVOLUTION AND CURRENT STATUS OF MARITIME LAND REGISTRATION AND INFORMATION SERVICE
81.202

EVOLUTION AND CURRENT STATUS OF THE MARITIMES LAND REGISTRATION AND INFORMATION SERVICE
80.076

EVOLUTION OF THE SOUTH CAROLINA COASTAL MAPPING PROGRAM
79.048

TITLE INDEX

EVOLUTIONARY APPROACH FOR IMPLEMENTING A LARGE MULTI-USER TERRAIN DATA BASE THROUGH AN INTER-ACTIVE SYSTEM FOR TERRAIN PERSPECTIVE SIMULATION IN-STEPS PROGRAM
74.021

EVOLUTIONARY APPROACH TO COMPATIBLE IDENTIFIERS FOR COMPUTERIZED LAND RECORDS
73.090

AN EXAMINATION OF TECHNIQUES FOR REFORMATTING DIGITAL CARTOGRAPHIC DATA PART22 THE VECTOR-TO-RASTER PROCESS
81.166

AN EXAMINATION OF TECHNIQUES FOR REFORMATTING DIGITAL CARTOGRAPHIC DATA: 1--THE RASTER-TO-VECTOR PROCESS
81.160

EXAMINATION OF THE NEED FOR, AND ALTERNATIVES TO, STANDARDIZATION OF LAND USE CLASSIFICATION AND CODING IN CANADA
71.008

EXAMPLE OF THE APPLICATION OF THE PRINCIPLES OF FILE MANAGEMENT TO GEOLOGICAL DATA-CANMINDEX
77.125

EXAMPLES OF SPATIAL DATA DISPLAY
72.041

EXCHANGING SPATIAL SYSTEMS TECHNOLOGY: RELATED ISSUES AND A CASE STUDY
77.251

EXECUTIVE SUMMARY
74.002

EXECUTIVE SUMMARY OF THE DESIGN CONCEPTS AND RECOMMENDATIONS. VOL. 1
79.172

EXPANDING REALM OF COMPUTER CARTOGRAPHY
78.052

EXPECTED PERFORMANCE OF SOME CELL BASED FILE ORGANIZATION SCHEMES
81.003

EXPERIENCE IN BUILDING THE CADASTRE IN THE MARITIME PROVINCES
77.178

EXPERIENCE WITH COMPUTER PROCESSING AND STORAGE OF DATA IN A PROJECT OF CADASTRE RENOVATION
80.063

EXPERIENCE WITH COMPUTER-ASSISTED MAPPING IN BURNABY
77.102

AN EXPERIENCE WITH THE ABSORPTION, DEVELOPMENT & DISSEMINATION OF SPATIAL INFORMATION HANDLING & MAPPING SYSTEMS
83.200

EXPERIENCES WITH DIGITAL TERRAIN ELEVATION DATA CONTOURING PROGRAMS
82.045

EXPERIMENT IN CONTOUR MAP SMOOTHING ON THE E.C.U. AUTOMATED CONTOURING SYSTEMS
71.019

EXPERIMENT IN PUBLIC LAND RECORD INDEXING
75.180

EXPLORER: A NATURAL LANGUAGE PROCESSING SYSTEM FOR OIL EXPLORATION
83.024

THE EXTENDIBLE CELL METHOD FOR CLOSEST POINT PROBLEMS
81.029

AN EXTENSION OF MAP OVERLAY CONCEPTS USING AN IMAGE PROCESSING SYSTEM
83.189

FACTS ABOUT U.S. LAND OWNERSHIP
78.180

FACULTY LAND USE PROBLEM DEFINITION SEMINAR. SYMPOSIUM: A SURVEY OF PROGRAMS FOR STATEWIDE LAND RESOURCE INVENTORIES HELD AT MADISON, WI. ON MAR. 22-23, 1972
72.084

FCLRIS AND LOCAL LAND USE PLANNING
76.061

FEASIBILITY OF COMPUTERIZED LAND TITLE SEARCH IN FAIRFAX COUNTY
75.143

FEASIBILITY STUDY OF A QUADRILATERALIZED SPHERICAL CUBE EARTH DATA BASE. FINAL REPORT MAY 1974 - MARCH 1975
75.050

FEASIBILITY STUDY OF THE ALBERTA ENVIRONMENTAL INFORMATION FOUNDATION
74.017

TITLE INDEX

FEASIBILITY STUDY: ALBERTA LAND INFORMATION SYSTEM
72.004

FEASIBILITY STUDY: RESOURCE DATA SYSTEMS
70.033

FEATURE SELECTION BY INTERACTIVE CLUSTERING
81.058

FEDERAL AGENCIES SPONSOR PROTOTYPE INFORMATION SYSTEMS
70.061

FEDERAL ROLES AND RESPONSIBILITIES IN A MODERNIZED LAND DATA SYSTEM
80.054

FEDERAL STATISTICS: REPORT
71.007

FEDERAL SURVEYING AND MAPPING: AN ORGANIZATIONAL REVIEW
81.007

FEED (FIELD EXPLOITATION ELEVATION DATA) EVALUATION
83.042

FEEDBACK, AN APPROACH TO NATURAL RESOURCE MANAGEMENT
77.132

FIELD NOTES ON A SMALL INFORMATION SYSTEM
76.177

FILE OF ARCHAEOLOGICAL SITES IN NORTH DAKOTA. FINAL REPORT
77.207

A FILE ORGANIZATION FOR GEOGRAPHIC INFORMATION PROCESSING SYSTEMS BASED ON SPATIAL PROXIMITY
82.251

FINAL REPORT COVERING PHASES 1 AND 2
72.030

FINAL REPORT 2-LAND RESOURCE INFORMATION SYSTEM: A DEVELOPMENT AND DEMONSTRATION FOR THE STATE OF IOWA
74.082

FINSYS - A TOOL FOR THE PROCESSING OF INTEGRATED RESOURCE INVENTORY DATA
78.004

FISCAL CADASTRE: A PRACTICAL APPROACH
80.107

FIVE YEAR JOINT DREE/LRIS EVALUATION OF LRIS PROGRAMME
77.062

FLOOD ESTIMATION IN EUROPE - A CASE STUDY OF APPLIED DIGITAL CARTOGRAPHY
83.114

FLOOD MITIGATION PLANNING USING HEC-SAM
80.035

FLOOD PLAIN MAPPING USING COMPUTER GRAPHICS
81.098

THE FLORIDA PILOT DIGITAL PRODUCTION PROJECT - A COOPERATIVE VENTURE BETWEEN THE U.S. BUREAU OF THE CENSUS AND THE U.S. GEOLOGICAL SURVEY
83.176

FLOWMAP: AN INTERACTIVE GRAPHIC MAPPING PROGRAM FOR DISPLAYING PATIENT ORIGIN-DESTINATION PATTERNS IN SPACE AND TIME
81.057

FOREST ANALYSIS YIELDS GRAPHIC RESULTS
82.099

FOREST RESOURCE INFORMATION SYSTEM (FRIS)
83.089

FOREST RESOURCE INFORMATION SYSTEM. PHASE 3. QUARTERLY REPORT ON PHASE 3, 1 APR. 30 JUNE 79
79.153

FOREST RESOURCE INFORMATION SYSTEM. PHASE 3: SYSTEM TRANSFER REPORT
81.084

FOREST RESOURCE INFORMATION SYSTEM. QUARTERLY REPORT 1 JUL - 30 SEP 78
78.119

FOREST SURVEYS AND ECOLOGICAL LAND CLASSIFICATION AND EVALUATION: SWAN HILLS TOWNSITE AREA
82.150

FORESTRY RESEARCH WITH PRISM MAPS
79.225

FORMULAS FOR PRECISE TRANSVERSE MERCATOR PROJECTION: A NEW METHOD YIELDS PRECISE GEODETIC MAPS
83.018

FORPLAN: A FOREST PLANNING LANGUAGE AND SIMULATOR
79.173

TITLE INDEX

FORSYTH COUNTY LAND RECORDS INFORMATION SYSTEM
74.052 74.008

FRACTAL DIMENSIONS OF LANDSCAPES AND OTHER ENVIRONMENTAL DATA
81.179

THE FRACTIONAL BROWNIAN PROCESS AS A TERRAIN SIMULATION MODEL
82.270

FRAMEWORK FOR ENCODING SPATIAL DATA
72.037

A FRAMEWORK FOR THE INVESTIGATION OF A SPATIAL DATA-BASE (EN)
81.051

FRESNO COUNTY PLANNING INFORMATION SYSTEM PROJECT: THE FIRST YEAR RESOURCES REQUIREMENTS AND PROSPECTS
75.153

FRIS: AN OPERATIONAL GEOGRAPHIC INFORMATION SYSTEM
81.064

FROM LAND INVENTORY TO LAND MANAGEMENT: THE EVOLUTION OF AN OPERATIONAL GIS
83.164

FROM LAND USE DATA TO AN INTERAGENCY INFORMATION SYSTEM: A CASE STUDY OF STOCKTON, CA.
75.188

FROM MONTH TO MINUTES
80.118

FROM PENCILS THROUGH PULSES TO MAPS INTEGRATING A DIGITAL MAPPING SYSTEM INTO A MULTI-DISCIPLINE ORGANIZATION
83.171

FULLY AUTOMATED COMPILATION OF GRAVITY AND GEOPHYSICAL MAPS
74.137

FUTURE DIRECTIONS - HARVARD PAPERS ON GEOGRAPHIC INFORMATION SYSTEMS.. VOLUME 1
78.017

FUTURE IMPACTS OF COMPUTER MAPPING
79.182

FUTURE IN TERRAIN ELEVATION DATA PROCESSING AT THE DEFENSE MAPPING AGENCY
83.016

THE FUTURE IN TERRAIN ELEVATION DATA PROCESSING AT THE DEFENSE MAPPING AGENCY
83.105

FUTURE OF INFORMATION SYSTEMS
79.196

FUTURE OF LAND RECORDS SYSTEMS
76.050

G-EXEC: A GENERALIZED FORTRAN SYSTEM FOR DATA HANDLING
75.126

GATES TO GREGG HIGH VOLTAGE TRANSMISSION LINE STUDY
82.053

GBF/DIME SYSTEM, A GEOGRAPHIC DIMENSION FOR DECISION-MAKING. CONFERENCE PROCEEDINGS. OCT. 30-31, 1975. SAN FRANCISCO, CA.
76.159

GBF/DIME: A DATA RESOURCE. CUE: A MAINTENANCE RESOURCE
74.080

GBIS: DEVELOPMENT OF A GEOGRAPHIC INDEX
73.065

GBIS: DEVELOPMENT OF A GEOGRAPHIC INDEX SYSTEM
73.061

GENERAL ASPECTS OF CADASTRE AND LAND REGISTRATION
74.063

GENERAL DESIGN SCHEME FOR AN OPERATIONAL GEOGRAPHIC INFORMATION SYSTEM: REGION 6 U.S. FISH AND WILDLIFE SERVICE
77.203

GENERAL PLANNING AND PROGRESS GUIDE
77.063

GENERAL SPATIAL DATA STRUCTURE
78.138

GENERAL TECHNOLOGY - AUDIO INPUT/OUTPUT
79.022

GENERALIZATION AND ERROR IN SPATIAL DATA BASES
83.186

GENERALIZED DIGITAL CONTOURING PROGRAM
71.043

GENERALIZED FOREST INVENTORY DATA PROCESSING SYSTEM
79.090

GENERALIZED GEOGRAPHIC INFORMATION SYSTEM FOR MANAGING A NON-REDUNDANT DEMOGRAPHIC AND RESOURCE DATA BASE
76.021

GEO-CODING - A TECHNIQUE IN THE DEVELOPMENT OF INFORMATION SYSTEMS
70.056

GEO-INFORMATION SYSTEM
72.023

GEO-INFORMATION SYSTEMS AND THE USE OF COMPUTERS IN HANDLING LAND USE INFORMATION. PROCEEDINGS OF THE UNITED STATES GEOLOGICAL SURVEY CONFERENCE ON LAND USE CLASSIFICATION SYSTEMS. WASHINGTON, D.C. 1971
71.070

GEO-REFERENCED DATA SYSTEMS
78.104

GEO-REFERENCES: THE LANGUAGE OF GEO-BASE SYSTEMS
73.112

GEO-UTILITY: AN ALTERNATIVE FOR LOCAL ORGANIZATION OF GEOPROCESSING TECHNOLOGY
75.019

GEOBASE INFORMATION SYSTEM IMPACTS ON SPACE IMAGE FORMATS. CONFERENCE-WORKSHOP HELD AT SANTA BARBARA, CA., SEPT. 11-15, 1977
78.142

GEOBASED SYSTEMS - FACING REALITY: A LOCAL PERSPECTIVE OF GEOGRAPHIC DATA NEEDS AND RESOURCES
78.130

GEOCARTOGRAPHICS - A GRAPHICAL SERVICE FOR STATISTICAL DATA
83.177

GEOCODED DATA SYSTEM OF THE MUNICIPALITY OF MALMS
77.048

GEOCODED MUNICIPALITY-UTILITY PLANNING SYSTEM
77.103

GEOCODED STATEWIDE INFORMATION SYSTEM FOR LOCATIONAL ANALYSIS
77.165

GEOCODES
78.113

GEOCODING ACTIVITIES IN THE ONTARIO STATISTICAL CENTRE
70.012

GEOCODING AND ASSESSMENT: A RESOURCE PAPER
71.059

GEOCODING AND CATS: A BEFORE AND AFTER REVIEW
71.034

GEOCODING AND GEOGRAPHIC BASE FILES: THE FIRST FOUR GENERATIONS
71.020

GEOCODING AND THE URBAN ENVIRONMENT: NEW APPROACHES
73.014 72.007

GEOCODING APPLICATIONS
75.223 75.215

GEOCODING DATA FOR DISPLAY AND POLICY ANALYSIS. VOLUME 1. THE POTENTIAL OF THE ACCESS (ALTERNATIVE COMPREHENSIVE COMMUNITY ENVIRONMENTAL STUDY SYSTEM) PROCESS R
77.092

GEOCODING DATA FOR DISPLAY AND POLICY ANALYSIS. VOLUME 2. TECHNOLOGY FROM THE USER PERSPECTIVE. PROCEEDINGS OF THE SANTA BARBARA, CA. CONFERENCE TAPED AT THE ACCESS PROJECT, LUGO ADOBE ON MAY 8-10, 1977
77.093

GEOCODING IN DENVER: ADMINISTRATIVE PROBLEMS AND AN APPLICATION
74.075

GEOCODING IN RESEARCH
70.032

GEOCODING OF LAND COVER DATA BY REMOTE SENSING AND MICROCOMPUTER
82.224

GEOCODING PROGRAMME OF URBAN CENTRES
70.036

GEOCODING SYSTEM FOR RURAL ONTARIO
76.136

THE GEOCODING SYSTEM IN CANADA AND ITS AREA MASTER FILE
82.276 82.193

GEOCODING SYSTEMS IN THE UNITED STATES - 1970. GENERAL OVERVIEW WITH REFERENCES TO CANADIAN EXPERIENCES.
70.023

GEOCODING SYSTEMS MANAGEMENT: THE CANADIAN APPROACH
72.079

GEOCODING WITH ADMATCH: A LOS ANGELES AREA EXPERIENCE
71.072

GEOCODING WITH MINI-MATCH-A TRANSPORTATION EXPERIENCE
77.032

GEOCODING-'73 PAPERS PRESENTED AT THE GEOGRAPHIC BASE FILE SPECIAL INTEREST GROUP SESSIONS. 1973 ANNUAL CONFERENCE OF THE URBAN AND REGIONAL INFORMATION SYSTEMS ASSOCIATION. HELD AT ATLANTIC CITY, N.J. ON 28-31 AUG., 1973
73.135

GEOCODING-71'. PAPERS FROM THE WORKING SESSION ON GEOGRAPHIC BASE FILE DEVELOPMENTS. 9TH ANNUAL CONFERENCE OF THE URBAN AND REGIONAL INFORMATION SYSTEMS ASSOCIATIONS
71.021

GEOCODING-72. PAPERS PRESENTED AT THE GEOGRAPHIC BASE FILE SPECIAL INTEREST GROUP SESSIONS, 1972 ANNUAL CONFERENCE OF THE URBAN AND REGIONAL INFORMATION SYSTEMS ASSOCIATION
72.006

GEOCODING: A GLOSSARY OF TERMS
74.097

GEOCODING: A USAC CONCERN
73.131 72.036

GEOCODING: THE SPATIAL DIMENSION OF AN INFORMATION SYSTEM FOR THE MVRO
81.093

GEODETIC POSITIONING NETWORKS.
82.143

GEODETIC REFERENCING OF LOCATION AND THE USE OF COORDINATES IN A LAND DATA SYSTEM FOR THE MASSACHUSETTS LAND RECORDS COMMISSION
76.179

GEOECOLOGY DATA BASE (SAS FORMAT)
82.118

GEOECOLOGY OF INFORMATION SYSTEM. PART I. BIOGEOGRAPHIC MAPPING OF SPECIES RANGES: DOCUMENTATION OF INPUT AND DATA CHECKING PROCEDURE FOR COMPUTER STORAGE AND RETRIEVAL OF INFORMATION
74.106

GEOGRAPHIC AND CARTOGRAPHIC PROGRAM FOR THE 1980 CENSUS
75.156

GEOGRAPHIC APPLICATIONS FOR SATELLITE DATA
83.139

GEOGRAPHIC ASPECTS OF INFORMATION SYSTEMS: INTRODUCTION AND SELECTED BIBLIOGRAPHY
71.077

GEOGRAPHIC BASE (DIME) FILE SYSTEM: A FORWARD LOOK
74.107 74.105 74.042

GEOGRAPHIC BASE (DIME) SYSTEM - 1975
76.132

GEOGRAPHIC BASE FILE DEVELOPMENTS AND THE GEOCODING PROGRAM OF STATISTICS CANADA
72.056

GEOGRAPHIC BASE FILE DEVELOPMENTS AND THE GEOCODING PROGRAMME OF STATISTICS CANADA
71.041

GEOGRAPHIC BASE FILE SYSTEM - ESTABLISHING A CONTINUING PROGRAM. CONFERENCE PROCEEDINGS. SEATTLE, WA., JAN. 18-19, 1973
73.128

GEOGRAPHIC BASE FILE SYSTEM – USES, MAINTENANCE, PROBLEM SOLVING
72.119 72.104

GEOGRAPHIC BASE FILES - PLANS, PROGRESS AND PROSPECTS. CONFERENCE PROCEEDINGS. JACKSONVILLE, FL., APR. 1-2, 1971
71.073

GEOGRAPHIC BASE FILES FOR LAW ENFORCEMENT - DESCRIPTIVE REPORT
75.124

GEOGRAPHIC BASE INDEX SYSTEM APPLICATION COMPLETION REPORT
73.044

THE GEOGRAPHIC BASE REGISTER AND A GEOGRAPHIC BASE FILE: THE USE OF POSTCODES AS SEGMENTIDENTIFICATION
83.225

TITLE INDEX

GEOGRAPHIC BASING: KEY TO COMPUTER LAND USE APPLICATIONS
78.190

GEOGRAPHIC BASIS, IN GEOGRAPHICALLY REFERENCED DATA STORAGE AND RETRIEVAL SYSTEM
70.027

GEOGRAPHIC CODES: FEDERAL INFORMATION PROCESSING STANDARDS
81.128

GEOGRAPHIC CODING
71.007

GEOGRAPHIC COMPUTER SYSTEM FOR ANALYSIS AND GRAPHIC DEPICTION OF SPATIAL POINT DATA
76.175

GEOGRAPHIC DATA BASE - RELIABILITY OR CHAOS
77.021

GEOGRAPHIC DATA BASE DEVELOPMENT
77.172

GEOGRAPHIC DATA BASE TECHNOLOGY: AN INTEGRATIVE APPROACH
73.015

GEOGRAPHIC DATA BASE USING FORDATS
77.058

GEOGRAPHIC DATA BASES IN THE MICROPROCESSOR ENVIRONMENT
83.143

GEOGRAPHIC DATA DISPLAY IMPLEMENTATION
77.147

GEOGRAPHIC DATA ENCODING ISSUES
75.073

GEOGRAPHIC DATA FOR ENGINEERING PURPOSES
75.031

GEOGRAPHIC DATA INDEX MAINTENANCE MODULE COMPUTER PROGRAM DESCRIPTIONS
75.055

GEOGRAPHIC DATA PROCESSING
79.156

GEOGRAPHIC DATA STRUCTURES: REPORT AFTER YEAR ONE
73.107

GEOGRAPHIC DATA SYSTEM, LANE COUNTY, OR.
79.169

GEOGRAPHIC IDENTIFICATION CODE SCHEME
72.105

GEOGRAPHIC INDEXING SUPPORT SYSTEM CONCEPTUALIZATION
76.043 73.042

GEOGRAPHIC INDEXING SUPPORT SYSTEM GEOGRAPHIC DATA BASE DESCRIPTION
77.160

GEOGRAPHIC INFORMATION PROCESSING FOR POLICE RESOURCE ALLOCATION
77.012

GEOGRAPHIC INFORMATION SYSTEM DEVELOPMENT IN THE CARETS PROJECT (CENTRAL ATLANTIC REGIONAL ECOLOGICAL TEST SITE) VOLUME 4. FINAL REPORT
77.170

GEOGRAPHIC INFORMATION SYSTEM FOR A RURAL COUNTY
80.031

A GEOGRAPHIC INFORMATION SYSTEM FOR ADDRESSING ISSUES IN THE COASTAL ZONE
81.154

GEOGRAPHIC INFORMATION SYSTEM FOR HYDROLOGIC SIMULATION AND ANALYSIS
77.112

GEOGRAPHIC INFORMATION SYSTEMS
73.073 72.018

GEOGRAPHIC INFORMATION SYSTEMS AND REMOTE SENSING
82.242

GEOGRAPHIC INFORMATION SYSTEMS AS APPLIED TO THE MANIPULATION OF ENVIRONMENTAL DATA
83.052

GEOGRAPHIC INFORMATION SYSTEMS AT THE GODDARD SPACE FLIGHT CENTRE
82.127

GEOGRAPHIC INFORMATION SYSTEMS IN CANADA
77.214

GEOGRAPHIC INFORMATION SYSTEMS IN DEVELOPMENT PLANNING
77.056

GEOGRAPHIC INFORMATION SYSTEMS IN HYDROGRAPHY AND OCEANOGRAPHY
74.144

GEOGRAPHIC INFORMATION SYSTEMS PANEL
76.001

TITLE INDEX

GEOGRAPHIC INFORMATION SYSTEMS, METHODS AND EQUIPMENT FOR LAND USE PLANNING, 1977
77.038

GEOGRAPHIC INFORMATION SYSTEMS: A BRIDGING TECHNOLOGY
81.194

GEOGRAPHIC INFORMATION SYSTEMS: A REVIEW
78.024

GEOGRAPHIC INFORMATION SYSTEMS: NEW TECHNOLOGIES AND USES
83.163

GEOGRAPHIC NAMES INFORMATION SYSTEM: AN AUTOMATED PROCEDURE OF DATA VERIFICATION
82.181

GEOGRAPHIC REFERENCING SYSTEM. STAGE 2- SYSTEM PROPOSAL. PROJECT 4.4. PHASE 1
78.001

GEOGRAPHICAL ANALYSIS FOR BUS STOP LOCATION FOR ROUTE DESIGN: METHOD AND CASE STUDY
75.173

GEOGRAPHICAL DATA HANDLING/ENVIRONMENTAL INFORMATION SYSTEMS. TWO VOLUMES. UNESCO/IGU SECOND SYMPOSIUM ON GEOGRAPHICAL INFORMATION SYSTEMS, OTTAWA, ONT., AUG., 1972
72.101

GEOGRAPHICAL INFORMATION SYSTEM DESIGN: CONCEPTS AND METHODS
72.066

GEOGRAPHICAL INFORMATION SYSTEM OF THE NATIONAL CAPITAL COMMISSION: A SUMMARY OF RECENT CHANGES
78.008

GEOGRAPHICAL INFORMATION SYSTEMS DESIGN: CASE STUDIES
72.065

GEOGRAPHICAL PERSPECTIVES AND URBAN PROBLEMS
73.100

GEOGRAPHICAL REFERENCE SYSTEMS
71.017

GEOGRAPHICAL REFERENCING SYSTEM
79.223

GEOGRAPHICALLY REFERENCED DATA STORAGE AND RETRIEVAL SYSTEM
78.175

GEOGRAPHICALLY REFERENCED DATA STORAGE AND RETRIEVAL SYSTEM (GRDSR) OF STATISTICS CANADA: YESTERDAY AND TODAY
76.173

GEOGRAPHICALLY-BASED INTERACTIVE CRIME ANALYSIS
77.011

GEOGRAPHICALLY-BASED PLANNING AND EVALUATION SYSTEM
72.088 71.066

GEOGRAPHICS: A COMPUTER'S EYE-VIEW OF TERRAIN
70.045

GEOGRAPHY
80.015

GEOGRAPHY AND THE PROPERTIES OF SURFACES. FINAL TECHNICAL REPORT
73.139

GEOLOG SYSTEM: FOR COMPUTER AND MANUAL ANALYSIS OF GEOLOGIC DATA FROM PORPHYRY AND OTHER DEPOSITS
72.012

GEOLOG: DETAILED DESCRIPTION OF ROCKS ASSOCIATED WITH VOLCANOGENIC DEPOSITS
78.013

GEOLOGIC RETRIEVAL AND STORAGE PROGRAM (GRASP)
75.034

GEOLOGICAL DATA BANK FOR STATISTICAL ANALYSIS
73.056

GEOLOGICAL DATA FILES/SURVEY OF INTERNATIONAL ACTIVITY. REPORT OF COGEODATA COMMITTEE ON STORAGE, AUTOMATIC PROCESSING AND RETRIEVAL OF GEOLOGICAL DATA OF THE INTERNATIONAL UNION OF GEOLOGICAL SCIENCES (IUGS)
72.052

GEOLOGICAL INFORMATION IN A COMPUTER MAPPING SYSTEM FOR LAND USE PLANNING
75.256

GEOLOGY AND IMAGE PROCESSING
81.061

GEOMAP
75.029

TITLE INDEX

GEOMETRIC IMAGE TRANSFORMATIONS
72.094

GEOMETRIC MODELING USING OCT-TREES
82.252

GEOMETRY ENGINE: A VLSI GEOMETRY SYSTEM FOR GRAPHICS.
82.081

GEOPLANNING RESEARCH PROGRAM SYSTEMS EVALUATION
73.038

GEOPLANNING RESEARCH PROGRAM. SYSTEMS ANALYSIS TASK/REPORT
72.027

GEOPLANS: A SUB-SYSTEM OF THE KANSAS CITY REGIONAL INFORMATION SYSTEMS (KCRIS)
70.028

GEOPROCESSING - GEODETIC DATA PROCESSING
83.059

GEOPROCESSING APPLICATIONS IN TWO LOCAL SCHOOL SYSTEMS
81.141

GEOPROCESSING CAPABILITY TRANSFER
77.235

GEOPROCESSING IN LOCAL GOVERNMENTS: A FEASIBILITY STUDY FOR THE CITY OF OMAHA
77.142

GEOPROCESSING SYSTEM PLANNING
78.095

GEOPROCESSING TECHNICAL TRANSFER IN LOCAL GOVERNMENT
81.146

GEOREF THESAURUS AND GUIDE TO INDEXING
81.120

GEOREFERENCE SYSTEM FOR THE ONTARIO MINISTRY OF NATIONAL RESOURCES
80.061

GEORGIA COMPUTER MAPPING PROGRAM
77.073 77.072

GEORGIA RESOURCE ASSESSMENT PROJECT: INSTITUTIONALIZING LANDSAT AND GEOGRAPHIC DATA BASE TECHNIQUES
80.088

GEOSCIENCE INFORMATION SOCIETY PROCEEDINGS OF THE 9TH ANNUAL MEETING. VOLUME 5. MIAMI BEACH, FL. NOV. 18, 1974
75.284

GEOSTATISTICS: USEFUL MEANS FOR AN EFFICIENT PRESENTATION OF URBAN AND REGIONAL DATA
81.143

GEOTECHNICAL ENGINEERING DATA SYSTEMS
80.038

GIMMAP: AN EXAMPLE OF A GEOGRAPHIC INFORMATION MANAGEMENT AND MAPPING SYSTEM
78.157

GIMMS - AN EXAMPLE OF AN OPERATIONAL SYSTEM FOR COMPUTER CARTOGRAPHY
76.166

GIMMS-AN OVERVIEW
79.208

GIRAS: A GEOGRAPHICAL INFORMATION RETRIEVAL AND ANALYSIS SYSTEM FOR HANDLING LAND USE AND LAND COVER DATA.
77.169

GIS - BEYOND GRAPHICS
83.166

GIS DATABASE DESIGN CONSIDERATIONS: A DETERMINATION OF USER TRADEOFFS
82.168

GISA: A GEOGRAPHIC - BASED INFORMATION SYSTEM
77.087

THE GLOBAL POSITIONING SYSTEM
83.204

GLOBAL VEGETATION AND LAND USE: NEW HIGH-RESOLUTION DATA BASES FOR CLIMATE STUDIES
83.055

GMAPS (GENERAL MAP ANALYSIS PLANNING SYSTEM) USER'S MANUAL
78.170

GMAPS AND GCARS: TERRAIN ANALYSIS AND ROUTE SELECTION SYSTEMS
80.104

GOVERNMENT POLICY AND DECISION MAKING IMPLICATIONS FOR LAND RESOURCE INFORMATION SYSTEM DESIGN
74.117

TITLE INDEX

GOVERNMENTAL IMPLICATIONS OF AUTOMATION PANEL
76.156

GOVERNMENTAL INTERVENTION IN THE CONVEYANCING PROCESS
73.026

GRAPHIC ANALYSIS OF RESOURCES BY NUMERICAL EVALUATION TECHNIQUES (GARNET)
77.179

GRAPHIC DATA BANK
72.010

GRAPHIC DISPLAY OF DIGITAL TERRAIN DATA
77.246

GRAPHIC INPUT PROCEDURE - AN OPERATIONAL LINE SEGMENT/POLYGON GRAPHIC TO DIGITIAL CONVERSION
77.094

GRAPHIC LINE SYMBOLIZATION SYSTEM. VOLUMES 1,2,3. FINAL TECHNICAL REPORTS SEPT. 73-APR. 75
76.016

GRAPHIC PERCEPTIONS OF LANGUAGE IN OTTAWA-HULL
77.215

GRAPHIC RETRIEVAL, ANALYSIS AND SPATIAL PORTRAYAL: AN INFORMATION SYSTEM FOR IDAHO'S FRESHWATER LAKES
82.137

A GRAPHICAL SYSTEM FOR GEOGRAPHICAL DATA PROCESSING IN A MINICOMPUTER ENVIRONMENT
81.060

GRAPHICS FOR REGIONAL POLICY MAKING-PRELIMINARY STUDY
73.055

GRAPHICS STANDARDIZATION - ACTIVITIES OF ISO/TC97/SC5/WG2 AND THEIR IMPACT IN EUROPE.
82.080

GRAS STANDARD GRAPHICS SOFTWARE. MEANS OF MAPPING STORAGE AND TRANSFER OF GRAPHICAL DATA
82.088

GRDSR (THE GEOGRAPHICALLY REFERENCED DATA STORAGE AND RETRIEVAL SYSTEM), A NEW METHOD OF ASSEMBLING STATISTICAL INFORMATION BY USER-SPECIFIED AREAS: AN INTRODUCTION
72.024

GRDSR: THE CANADIAN GEOCODING SYSTEM
72.080

GREAT EXPECTATIONS
74.003

GRID ANALYSIS TECHNIQUE AS AN IMPLEMENT FOR LAND USE PLANNING AND RESOURCE MANAGEMENT
76.094

GRID CO-ORDINATE SYSTEMS AND THEIR USE IN MUNICIPAL INFORMATION MANAGEMENT
71.068

GRID CO-ORDINATE SYSTEMS AND THEIR USE IN URBAN INFORMATION MANAGEMENT. SEMINAR C
71.042

GRID COORDINATE SYSTEM: TYING MAPS TO COMPUTERS
75.176

GRID TO POLYGON CONVERSION IN GEOGRAPHIC INFORMATION PROCESSING. AN APPLICATION TO RESOURCE PLANNING FOR THE CYPRESS HILLS
80.065

GRID: COMPUTERIZED SYSTEM FOR LAND-USE PLANNING (PARTS ONE AND TWO)
75.251

GRIDDING TOPOGRAPHICAL SURFACES
76.009

GRIDGEN USER'S MANUAL
82.108

GRIDS AND DNR
73.066

GRIP, A GEOGRAPHICAL RETRIEVAL AND INFORMATION PROCESSING PACKAGE
78.046

GUIDE TO LAND COVER AND USE CLASSIFICATION SYSTEMS EMPLOYED BY WESTERN GOVERNMENTAL AGENCIES
77.088

A GUIDE TO LAND USE AND LAND COVER DIGITAL DATA IN THE GEOGRAPHIC INFORMATION RETRIEVAL AND ANALYSIS SYSTEM FORMAT
81.187

GUIDEBOOK ON INFORMATION/DATA HANDLING, ISSUE PAPERS. TECHNICAL SUPPORTING REPORT E
75.104

TITLE INDEX

GUIDELINES FOR INTERNATIONAL DATA COLLECTION AND RESOURCES ASSESSMENTS AND ANALYSES
77.053

HANDLING OF SPACE AND TIME DEPENDENT DATA: THREE EXAMPLES FROM GEOGRAPHY
77.030

HARD COPY DISPLAY
79.023

HARD COPY MAPS FROM ORTHOPHOTOS USING COORDINATES
76.107

HARVARD PAPERS ON GEOGRAPHIC INFORMATION SYSTEMS
81.050 78.178

HEXAGONAL DATA BASE STUDY
83.006

HIDDEN LINES USING THE EXCELL METHOD
81.028

HIDDEN-LINE REMOVAL FROM THREE DIMENSIONAL MAPS AND DIAGRAMS
75.225

HIERARCHICAL DATA STRUCTURES FOR REPRESENTING GEOGRAPHICAL INFORMATION
82.323

A HIERARCHICAL PATTERN EXTRACTION SYSTEM FOR HEXAGONALLY SAMPLED IMAGES
81.089

HIGH HIBRID STRUCTURES FOR THE STORAGE AND MANIPULATION OF VERY LARGE SPATIAL DATA SETS
83.227

A HIGH-ACCURACY AIRBORNE DIGITAL LINE IMAGER
83.123

HIGH-PERFORMANCE PLOTTER EXHIBITS MANY INTERESTING FEATURES
82.092

A HIGH-PERFORMANCE RASTER DISPLAY SYSTEM
82.284

HIGHLIGHTS OF ATLANTA CONFERENCE ON COMPATIBLE LAND IDENTIFIERS
75.239

HISTORY OF THE ESTABLISHMENT OF A DEGREE COURSE IN SURVEYING ENGINEERING
79.204

HOBOKEN SITE STATUS INVENTORY. STATUS REPORT (FINAL)
77.135

HOMETOWN GEOCODING: MODELS AND PROSPECTS
74.012

HORIZONTAL INTEGRATION OF LOCAL GOVERNMENT PROPERTY DATA
75.227

HOUSING BUILDS A DATABASE
81.070

HOUSING INFORMATION SYSTEM. VOLUME 2. HOUSING STOCK DATA BASE APPLICATIONS. FINAL REPORT
74.104

HOW COMPUTERS ARE IMPROVING OUR MAPS
79.055

HOW TO DEAL WITH THE GEOGRAPHIC BASE SYSTEM WITHOUT A COMPUTER
77.078

HRD-1 LASER DISPLAY SYSTEM
75.230

HUMAN AND PHYSICAL DATA NEEDS IN LAND USE PLANNING
74.122

HUMAN ELEMENT IN DIGITIZING
77.224

A HYBRID DATA STRUCTURE FOR THE STORAGE AND MANIPULATION OF LARGE SPATIAL DATA SETS
83.209

A HYBRID STRUCTURE FOR THE STORAGE AND MANIPULATION OF VERY LARGE SPATIAL DATA SETS
83.062

HYDROGRAPHIC SURVEY REQUIREMENTS SYSTEM (HYSUR)
83.106 83.081

HYDROLOGIC APPLICATIONS OF DTMS
80.039

HYDROLOGIC DATA BANK ACTIVITIES. PAPER 77-4542
78.027

IAF GEOGRAPHIC DATA PROCESSING SYSTEM
81.020

TITLE INDEX

IBIS: A GEOGRAPHIC INFORMATION SYSTEM BASED ON DIGITAL IMAGE PROCESSING AND IMAGE RASTER DATA TYPE
77.033

ICA COMMISSION PANEL
76.143

ICFITG: A PROGRAM FOR INTERACTIVE CONTOURING FROM AN IRREGULAR TRIANGULAR GRID
81.090

ICMS: AN INTERACTIVE CHOROPLETH MAPPING SYSTEM
79.203

IDENTIFICATION AND ANALYSIS OF PROBABLE CONSEQUENCES OF A STANDARD PARCEL IDENTIFIER
73.097

IDENTIFICATION OF CARTOGRAPHIC SYMBOLS FROM TV DISPLAYS
73.141

IDENTIFYING ENVIRONMENTAL FEATURES FOR LAND MANAGEMENT DECISIONS
82.014 81.074

IFAS: A PROGRAM TO MEASURE FRACTAL DIMENSIONS OF CURVES AND SURFACES
82.117

IGDMS - AN INTEGRATED GEOGRAPHIC DATA MANAGEMENT SYSTEM
83.132

ILLIMAP - A COMPUTER-BASED MAPPING SYSTEM FOR ILLINOIS
70.046

IMAGE BASED INFORMATION SYSTEM: ARCHITECTURE FOR INTEGRATING SATELLITE IMAGERY AND CARTOGRAPHIC DATA BASES
79.028

IMAGE PROCESSING OF DIGITAL CARTOGRAPHIC DATA
82.135 82.036

IMAGE UNDERSTANDING RESEARCH
82.031 81.015

IMAGE UNDERSTANDING RESEARCH AND ITS APPLICATION TO CARTOGRAPHY AND COMPUTER-BASED ANALYSIS OF AERIAL IMAGERY
83.078

IMAGE: A MINICOMPUTER GEOGRAPHIC INFORMATION SYSTEM
74.019

IMIS PSIS, GEOGRAPHIC INDEXING SUPPORT SYSTEM REQUIRMENTS SURVEY
73.043

THE IMPACT OF ADA ON CARTOGRAPHY AND TOPOLOGICAL TERRAIN MODELING
81.134

THE IMPACT OF AUTOMATION: MODELS AND SCENARIOS FOR CONTROLLED CHANGE
81.030

THE IMPACT OF COMPUTER CARTOGRAPHY
81.178

THE IMPACT OF COMPUTER TECHNOLOGY IN THE MAPPING ENVIRONMENT
83.167

IMPACT OF DATA STRUCTURE ON GEOGRAPHIC INFORMATION PROCESSING
76.041

IMPACT OF ENVIRONMENTAL DATA AND SOME USES
79.122

IMPACT STUDY ON PHASE 1 AND PHASE 2 OF THE LRIS PROGRAMME. DRAFT COPY
77.002

IMPLEMENTATION OF A DISPLAY ROUTINE FOR CODED MAP DATA BASES
81.086

IMPLEMENTATION OF A GRID-BASED LINE-DRAWING QUANTIZATION SYSTEM
82.006

IMPLEMENTATION OF A MULTI-PURPOSE CADASTRE FOR WYANDOTTE COUNTY, KANSAS
82.201

IMPLEMENTATION OF COMPOSITE COMPUTER MAPPING
71.035

IMPLEMENTATION OF THE DBS GEOCODING SYSTEM IN ONTARIO
70.057

IMPLEMENTING A CENTRALIZED MUNICIPAL GEOPROCESSING CAPABILITY
81.147

IMPLICATIONS OF THE FORSYTH COUNTY LAND RECORD INFORMATION SYSTEM ON THE ADMINISTRATION OF THE PROPERTY TAX IN NORTH CAROLINA
76.082

IMPROVEMENT OF LAND PLANNING INFORMATION: THE LAWYER'S PERSPECTIVE
80.021

TITLE INDEX

IMPROVEMENTS AND SHORTCOMINGS IN THE COMPUTATION OF AREA COVERAGE BY THE USE OF TOPOGRAPHICAL DATA BASES
83.063

IMPROVING LAND TITLE RECORDS
71.051

IMPROVING THE USEABILITY OF THE DEFENSE MAPPING AGENCY DIGITAL FEATURE ANALYSIS DATA FOR TRAINING SIMULATOR APPLICATIONS
82.051

INCREMENTAL APPROACH TO THE DESIGN OF A GEOGRAPHIC INFORMATION SYSTEM
77.082

INCREMENTAL IMPLEMENTATION OF A MODERN MULTI-PURPOSE CADASTRAL SYSTEM
77.051 77.045

INDEX TO THE DATA BANKS
80.034

INDICES, A TECHNIQUE FOR USING LARGE SPATIAL DATA BASES
76.163

INFORMATION CONUNDRUM OR POSITION, THE COMMON THREAD
78.038

INFORMATION NEEDS OF THE CONTINUING URBAN TRANSPORTATION PLANNING PROCESS
72.038

INFORMATION PAK
75.053

INFORMATION RETRIEVAL FROM COMPUTER DATA BASES USING AUTOMATICALLY DIGITIZED MAPS
77.244

INFORMATION RETRIEVAL WITH LARGE-SCALE GEOGRAPHIC DATA BASES
71.060

INFORMATION SERVICES AND INFORMATION PROCESSING
75.254

INFORMATION SYSTEM DEVELOPMENTS IN NORTH AMERICA
77.040

INFORMATION SYSTEM FOR ENVIRONMENTAL PLANNING
74.076

INFORMATION SYSTEM FOR RURAL LAND-USE PLANNING
73.127

INFORMATION SYSTEM FOR URBAN PLANNING
81.201

INFORMATION SYSTEM INPUTS TO PLANS: A REVIEW OF THE STATE-OF-THE-ART
77.083

INFORMATION SYSTEM INPUTS TO PROGRAMMES - THE CITY OF TORONTO DEVELOPMENT MONITORING SYSTEM
77.111

INFORMATION SYSTEMS AT THE NATIONAL LAND SURVEY OF SWEDEN
77.184

INFORMATION SYSTEMS ENTER SPACE AGE
74.026

INFORMATION SYSTEMS FOR COASTAL ZONE MANAGEMENT
78.023

INFORMATION SYSTEMS FOR LAND RESOURCE PLANNING
73.053

INFORMATION SYSTEMS FOR THE URBAN TRANSPORTATION PLANNING PROCESS. TECHNICAL REPORT
71.024

INFORMATION SYSTEMS IN PRACTICE: RECENT EXAMPLES IN NORTH AMERICA. CHAPTER SEVEN
77.039

INFORMATION SYSTEMS IN REGIONAL PLANNING
77.220

INFORMATION SYSTEMS INPUTS TO POLICIES: THE MARITIMES' EXPERIENCE
77.211

INFORMATION TECHNOLOGIES AND GOVERNMENT PROCESSES
80.079

INFORMATION-THEORETIC SURFACE MODELING
83.027

INFORMATION/DATA HANDLING FOR REGIONAL LAND USE PLANNING AND DEVELOPMENT
77.041

INFORMATION/DATA HANDLING FOR REGIONAL LAND USE PLANNING AND DEVELOPMENT (CHAPTER 7)
77.039

TITLE INDEX

INFORMATION/DATA HANDLING REQUIREMENTS FOR SELECTED STATE RESOURCE MANAGEMENT PROGRAMMES. TECHNICAL SUPPORTING REPORT C
75.008

INFORMATION/DATA HANDLING REQUIREMENTS. TECHNICAL REPORT C
75.249

INFORMATION/DATA HANDLING: A GUIDEBOOK FOR DEVELOPMENT OF STATE PROGRAMMES
75.248

INFRASTRUCTURE INFORMATION REQUIREMENTS IN THE MARITIME PROVINCES: AN ANALYSIS
76.162

INITIAL APPRAISALS OF THEMATIC MAPPER IMAGERY: NEW DATA APPLICATIONS FOR LAND RESOURCE PLANNERS & MANAGERS
83.155

INPUT METHODS AND FACILITIES AVAILABLE FOR LAND SURVEY DATA
77.150

INPUT METHODS PANEL
76.022

THE INSTALLATION AND MANAGEMENT OF AN INTERACTIVE COMPUTER MAPPING SYSTEM
82.191

INSTITUTIONAL AND CULTURAL ASPECTS OF PLACE-RELATED INFORMATION SYSTEMS
80.050

INSTRUMENTATION AND DATA PROCESSING USED IN EARTH RESOURCES TECHNOLOGY SATELLITES (ERTS)
82.136

INTAHILS: AN INTERACTIVE ANALYTICAL HILL SHADING SYSTEM USING ENTROPY AS AN INFORMATION STATISTIC
82.022

INTEGRATED DATA BASE PROGRAM
81.081

INTEGRATED DENSIFICATION BY DOPPLER
81.132

INTEGRATED DIGITAL MAPPING SYSTEM
78.187

INTEGRATED GEOGRAPHIC DATA-BASE TECHNOLOGY
79.074

INTEGRATED INVENTORIES OF RENEWABLE NATURAL RESOURCES. GENERAL TECHNICAL REPORT
78.164

INTEGRATED INVENTORIES OF RENEWABLE NATURAL RESOURCES: PROCEEDINGS OF THE WORKSHOP HELD IN TUCSON, AZ. ON JAN 8-12, 1978
78.107

INTEGRATED LAND INFORMATION SYSTEMS: SOME PERCEPTIONS AND SUGGESTIONS
76.111

AN INTEGRATED MAPPING SYSTEM FOR TODAY AND TOMORROW
83.194

INTEGRATED MUNICIPAL INFORMATION SYSTEM. HUMAN RESOURCES DEVELOPMENT SUBSYSTEM. ANALYSIS OF GEOCODING. VOLUME 4.
71.016

INTEGRATED MUNICIPAL INFORMATION SYSTEM. PHYSICAL AND ECONOMIC DEVELOPMENT SUBSYSTEM. SYSTEMS ANALYSIS. VOLUME 1: SUMMARY OF SYSTEMS ANALYSIS. COMPLETION REPORT ON TASK 1
71.014

INTEGRATED MUNICIPAL INFORMATION SYSTEM. PHYSICAL AND ECONOMIC DEVELOPMENT SUBSYSTEM. SYSTEMS ANALYSIS. VOLUME 3: SYSTEMS ANALYSIS OF OPERATIONAL AREAS. COMPLETION REPORT ON TASK 1
71.015

INTEGRATED PHOTOGRAMMETRIC INSTRUMENT NETWORK
78.057

INTEGRATED PUBLIC MAPPING SYSTEMS: A STATE-OF-THE-ART APPROACH
79.205

INTEGRATED RESOURCE INFORMATION SYSTEM
79.195

INTEGRATED RESOURCE MANAGEMENT INFORMATION: A ROLE FOR LANDSAT
81.124

INTEGRATED RESOURCES INVENTORY USING LANDSAT DATA
82.229

INTEGRATED SURVEY AREA
79.147

TITLE INDEX

INTEGRATED SURVEYS AND MAPPING. (LEVE'S ET LA CARTOGRAPHIC INTEGRES)
75.193

INTEGRATED TECHNOLOGY FOR DEVELOPMENT PLANNING
80.094

INTEGRATED TIMBER AND WILDLIFE HABITAT INVENTORIES
79.168

INTEGRATED WILDFIRE AND FOREST INVENTORY MANAGEMENT INFORMATION SYSTEM
78.160

INTEGRATED WOODLANDS INFORMATION AND PLANNING SYSTEM
75.072

INTEGRATING CARTOGRAPHIC AND GEOGRAPHIC INFORMATION SYSTEMS EDUCATION
79.133

INTEGRATION AND ANALYSIS OF MULTIPLE GEOGRAPHIC DATA BASES: AN APPLICATION OF ODYSSEY
79.080

INTEGRATION AND MANIPULATION OF REMOTELY SENSED & OTHER DATA IN GEOGRAPHIC INFORMATION SYSTEMS
81.186

INTEGRATION OF IMAGERY, ELEVATION MODELS AND POLYGON COORDINATE FILES THROUGH A COMMON MAP BASE
82.147

INTEGRATION OF LAND-USE DATA AND SOIL SURVEY DATA
77.065

INTEGRATION OF LANDSAT CCT DATA AND DIGITAL TERRAIN DATA IN CARTOGRAPHIC APPLICATION
78.121

INTEGRATION OF LANDSAT DATA AND NATIONAL LAND DATA SYSTEM
78.122

INTEGRATION OF LANDSAT IMAGE DATA WITH GEOGRAPHIC DATA BASES
82.324

INTEGRATION OF LOCAL AND REGIONAL DATA BASES
81.130

INTEGRATION OF REMOTELY SENSED DATA INTO GEOGRAPHIC INFORMATION SYSTEMS
81.185

INTEGRATION OF VECTOR AND GRID DATA BASES IN B.C. FOREST INVENTORY
83.178

INTEGRATIVE, COORDINATIVE, FACILITATIVE, AND ADMINISTRATIVE ROLES REQUIRED OF STATE GOVERNMENTS IN THE DEVELOPMENT OF INFORMATION SYSTEMS WITH A SPATIAL COMPONENT
72.064

INTER-REGIONAL INFORMATION SYSTEM (IRIS)
74.074

INTERACTION BETWEEN URBANIZATION AND LAND QUALITY AND QUANTITY IN ENVIRONMENTAL PLANNING AND DESIGN. THE DATA BASE, TECHNICAL DOCUMENTATIONS
78.146

INTERACTION BETWEEN URBANIZATION AND LAND: QUALITY AND QUANTITY IN ENVIRONMENTAL PLANNING AND DESIGN
73.069

INTERACTIVE AIDS FOR CARTOGRAPHY AND PHOTO INTERPRETATION. SEMIANNUAL TECHNICAL REPORT 11 MAY - OCT. 78
78.061

INTERACTIVE AIDS FOR CARTOGRAPHY AND PHOTO INTERPRETATION. SEMIANNUAL TECHNICAL REPORT. 12 NOV 76 - 12 MAY 77
77.014

INTERACTIVE AIDS FOR CARTOGRAPHY AND PHOTO INTERPRETATION. SEMIANNUAL TECHNICAL REPORT, 12 MAY - 12 NOV. 76
76.013

INTERACTIVE ANALYSIS METHODS FOR RESOURCE MAPPING
78.162

INTERACTIVE ANALYSIS OF DIGITAL TERRAIN ELEVATION AND SURFACE FEATURE DATA BASES
83.093

AN INTERACTIVE AND USER-ORIENTED THREE-DIMENSIONAL GRAPHICS EDITOR
83.137

INTERACTIVE CARTOGRAM PRODUCTION ON A MICROPROCESSOR GRAPHICS SYSTEM
78.174

TITLE INDEX

INTERACTIVE CARTOGRAPHIC DESIGN. PAPER 77-259
77.171

INTERACTIVE CARTOGRAPHY
75.161

INTERACTIVE CARTOGRAPHY AT ECU: REGIONAL GEOGRAPHY A LA MODE
75.027

INTERACTIVE CARTOGRAPHY FOR LARGE SCALE MANAGEMENT INFORMATION SYSTEMS
79.098

INTERACTIVE CARTOGRAPHY: AN ANALYTICAL TOOL FOR MANAGEMENT INFORMATION SYSTEMS
79.097

INTERACTIVE CHOROPLETH MAPPING ON A RASTER-ORIENTATED COLOR DISPLAY
82.240

INTERACTIVE COLOUR MAP DISPLAYS OF DOMESTIC INFORMATION
79.053

INTERACTIVE COMPUTER GRAPHIC PREPROCESSING FOR THREE-DIMENSIONAL BOUNDARY-INTEGRAL ELEMENT ANALYSIS
83.208

INTERACTIVE COMPUTER GRAPHIC PREPROCESSING FOR THREE-DIMENSIONAL FINITE ELEMENT ANALYSIS
82.085

INTERACTIVE COMPUTER GRAPHICS
82.126 82.125

INTERACTIVE COMPUTER GRAPHICS ON MEDIUM-POWERED SYSTEMS: APPLICATIONS IN THEMATIC CARTOGRAPHY
77.025

INTERACTIVE COMPUTER GRAPHICS. MARCH 1980 - JULY 1981 (CITATIONS FROM THE ENGINEERING INDEX DATA BASE)
81.096

INTERACTIVE COMPUTER GRAPHICS. VOLUME 2. FEB. 1976-1977 (CITATIONS FROM THE ENGINEERING DATA BASE.) REPORT FROM 1976-77
79.034

INTERACTIVE COMPUTER GRAPHICS. VOLUME 2. 1976-JAN. 1979 (CITATIONS FROM THE NTIS DATA BASE)
79.035

INTERACTIVE COMPUTER GRAPHICS. VOLUME 3. 1978-FEB. 1979 (CITATIONS FROM THE ENGINEERING INDEX DATA BASE). REPORT FOR 1978-FEB. 79
79.036

INTERACTIVE COMPUTER GRAPHICS. 1976 - JUNE, 1981 (CITATIONS FROM THE NTIS DATA BASE)
81.100

INTERACTIVE COMPUTER GRAPHICS. 1978 - FEB, 1980, CITATIONS FROM THE ENGINEERING INDEX DATA BASE
81.097

INTERACTIVE COMPUTER GRAPHICS: AN OVERVIEW. REPORT OF THE CODATA TASK GROUP ON COMPUTER USE
79.127

INTERACTIVE COMPUTER-AIDED CARTOGRAPHY WITHOUT A PROGRAMMER
76.083

INTERACTIVE DIGITAL CORRELATION TECHNIQUES FOR AUTOMATIC COMPILATION OF ELEVATION DATA
81.019

INTERACTIVE DIGITAL IMAGE PROCESSING FOR TERRAIN DATA EXTRACTION
81.009

INTERACTIVE DIGITAL PHOTOGRAMMETRY AT B.C. HYDRO.
78.058

INTERACTIVE DIGITIZING AND DISPLAY PROCEDURES FOR A COMPUTER-BASED INDUSTRIAL INFORMATION SYSTEM
79.016

INTERACTIVE DIGITIZING AND GRAPHICS: THE UNIVERSITY OF IOWA GEOGRAPHY GRAPHICS LABORATORY
79.062

INTERACTIVE DISPLAY OF POLYGONAL DATA
78.178 77.249

INTERACTIVE EDITING CARTOGRAPHIC DATA
75.138

INTERACTIVE GBF CREATION AND COMPUTER MAPPING SYSTEM
75.120

INTERACTIVE GRAPHIC SYSTEMS IN LAND USE PLANNING: PROGRESS AND PROSPECTS
78.037

INTERACTIVE GRAPHICS SYSTEMS IN LOCAL GOVERNMENT MAPPING: THE ACHIEVEMENTS AND CHALLENGES
83.184

INTERACTIVE GRAPHICS: ANALYTICAL TOOL FOR GEOPROCESSING
73.070

INTERACTIVE GRAPHICS: STAGE II SPECIAL APPLICATIONS
80.055

INTERACTIVE LAND USE SIMULATION: A TOOL FOR LOCAL DECISION MAKERS
82.186

INTERACTIVE MANIPULATION OF LAND USE DATA
78.176

INTERACTIVE MAP IN URBAN RESEARCH. FINAL REPORT AFTER YEAR ONE
73.052

INTERACTIVE MAP INFORMATION EXCHANGE SYSTEM
82.140

INTERACTIVE MAPS IN URBAN RESEARCH. REPORT AFTER YEAR ONE
72.072

INTERACTIVE METHOD FOR DIGITIZING ZONE MAPS
75.095

INTERACTIVE MINI SYSTEM IMPROVES MANAGEMENT OF NATIONAL FOREST
78.191

INTERACTIVE ON-LINE MULTI-MINICOMPUTER CONFIGURATION FOR APPLICATION TO CARTOGRAPHY
74.077

INTERACTIVE RASTER DATA STRUCTURE STUDY
83.023

INTERACTIVE SPATIAL ANALYSIS AND DISPLAY SYSTEM. RESEARCH REPORT JULY '76 - JUNE '77
77.054

INTERACTIVE THEMATIC MAPPING: A REPORT
76.176

INTERACTIVE VIDEOGRAPHIC COMMUNICATION
82.104

INTERGOVERNMENTAL COOPERATION IN CANADA
76.133

INTERGRAPH USERS MANUAL
81.171

INTERMEDIATE - SCALE MAPPING
76.165

INTERMEDIATE-SCALE MAPPING PROGRAM. PAPER 77-249
77.009

INTERNATIONAL GEOCODING 1974 COLLOQUIUM PROCEEDINGS. ST. RAPHAEL, FRANCE. APR. 22-26, 1974
75.002

INTERNATIONAL PROPERTY ASSESSMENT ADMINISTRATION VOLUME 7
75.079

INTERNATIONAL PROPERTY ASSESSMENT ADMINISTRATION. VOLUME 7
75.107

INTERNATIONAL PROPERTY ASSESSMENT ADMINISTRATION, VOLUME 6
74.056

INTERPOLATION OF GRID DIGITAL ELEVATION MODELS FROM DIGITIZED CONTOURS
82.260

INTERPRETATION AND DISPLAY OF THE NURE DATA BASE USING COMPUTER GRAPHICS
80.064

INTERPRETATION OF RESOURCE DATA: PROBLEMS OF SCALE AND SPATIAL TRANSFERABILITY
82.205

INTRODUCTION AND ECONOMIC REVIEW OF MARITIME LAND REGISTRATION AND INFORMATION SERVICE OF THE COUNCIL OF MARITIME PREMIERS
77.130

INTRODUCTION TO COMPUTER DISPLAY APPLICATIONS USING SPATIAL DATA
72.069

INTRODUCTION TO COMPUTERIZED LAND-INFORMATION SYSTEMS (EN)
81.048

AN INTRODUCTION TO DATABASE SYSTEMS
81.165

INTRODUCTION TO ENVIRONMENTAL REMOTE SENSING
82.296

TITLE INDEX

INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS
77.055

INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS. CHAPTER TWO
77.041

INTRODUCTION TO IMGRID, AND INFORMATION MANIPULATION SYSTEM FOR GRID CELL DATA STRUCTURES
79.190

INTRODUCTION TO SOFTWARE
76.101

INTRODUCTION TO THE CITY OF LOS ANGELES LAND USE PLANNING AND MANAGEMENT SUBSYSTEM (LUPAMS). FINAL REPORT
75.056

INTRODUCTION TO THE CONCEPT OF A MATRIX FOR LAND INFORMATION
82.219

INTRODUCTION TO THE ECONOMICS OF GEOGRAPHICAL INFORMATION SYSTEMS
72.067

INTRODUCTION: COMPUTER CARTOGRAPHY IN SWEDEN AND CANADA
77.216

INTRODUCTORY COMPUTER MAPPING INSTRUCTION AT THE UNIVERSITY OF SOUTH CAROLINA
79.049

INTUVAL '75: AN INTERACTIVE COMPUTER GRAPHICS PLANNING AND DESIGN TOOL
75.028

INVENTORY AND INDEX ALBERTA LAND RELATED DATA BASES
77.004

INVENTORY INFORMATION ON PUBLIC LANDS, VOLUMES 1 AND 2
70.037

INVENTORY OF COMPUTER SOFTWARE FOR SPATIAL DATA HANDLING
76.088

INVENTORY OF FEDERALLY MAINTAINED LAND DATA
82.320

AN INVENTORY OF FEDERALLY MAINTAINED LAND DATA
82.318

INVENTORY OF INFORMATION ON SASKATCHEWAN LAND. TWO VOLUMES
76.114

INVENTORY OF STATE NATURAL RESOURCES INFORMATION SYSTEMS
83.077

INVENTORY OF STATE-OWNED LAND METHODOLOGY. FINAL TECHNICAL PAPER
72.082

INVESTIGATION OF CARTOGRAPHIC PRESSPLATE RECORDING FROM DIGITAL DATA. FINAL REPORT, OCT. 75-FEB. 76
76.080

IOSL GRAPHICS FOR THE NASCOM
82.094

IPDS: A MULTIPURPOSE LAND INFORMATION SYSTEM FOR THE EIGHTIES
80.090

IRIS - ILLINOIS RESOURCE INFORMATION SYSTEM: FEASIBILITY STUDY. FINAL REPORT: SUMMARY AND RECOMMENDATIONS
72.110

IRIS-NARIS: A GEOGRAPHIC INFORMATION SYSTEM FOR PLANNERS
73.008

ISO: A FORTRAN IV PROGRAM FOR GENERATING ISOPLETH MAPS ON SMALL COMPUTERS
78.005

ISSUE PAPERS - TECHNICAL REPORT E
75.245 75.075

ISSUES ON EXCHANGING SPATIAL SYSTEMS TECHNOLOGY
76.174

ISSUES RELATIVE TO THE NATIONWIDE ADOPTION OF THE UNIVERSAL TRANSVERSE MERCATOR GRID REFERENCE SYSTEM
73.062

JOY OF GEORGE - FULLY ILLUSTRATED: A GOURMET GUIDE TO MUNICIPAL GEOCODING
74.098

JURIDICAL DATA SYSTEM
79.006

JURIDICAL OR FISCAL CADASTRE: ECONOMICS OF LAND INFORMATION SYSTEMS
75.276

TITLE INDEX

KEEPING LAND RELATED INFORMATION UP-TO-DATE
80.091

KEY ISSUES IN INSTRUCTIONAL COMPUTER GRAPHICS
81.191

KEY ISSUES IN THE ANALYSIS OF REMOTE SENSING DATA: A REPORT ON THE WORKSHOP
81.085 81.010

A KNOWLEDGE BASE FOR RASTER TOPOLOGY: INTERACTIVE RASTER DATA STRUCTURES PROJECT INFORMATION
82.298

KNOWLEDGE ENGINEERING FOR SPATIAL DATA SYSTEMS (KESDS)
83.202

KRS: A FAST, SPECIAL-PURPOSE DATA BASE SYSTEM
78.075

LAMAP, THE LOS ALAMOS NATIONAL LABORATORY MAPPING CODE
82.113

LAMIS: LOCAL AUTHORITY MANAGEMENT INFORMATION SYSTEM
76.038

LAMP: METROPOLITAN NASHVILLE'S LOCATION AND MAPPING PROGRAM
75.088

LAND AND INFRASTRUCTURE MAPPING PROGRAM
81.159

LAND AND PROPERTY INFORMATION SYSTEMS
76.135

LAND CAPABILITY STUDIES OF THE SOUTH DAKOTA AUTOMATED GEOGRAPHIC INFORMATION SYSTEM
79.181

LAND CLUTTER STUDY: LOW GRAZING ANGLES (BACKSCATTERING)
82.098

LAND DATA FILES: HOW MUCH INTEGRATION?
75.021

LAND DATA MANAGEMENT SYSTEM FOR RESOURCE PLANNING
77.232

LAND DATA SYSTEMS - ANOTHER LOOK
77.128

LAND DATA SYSTEMS AND COUNTY SURVEY PROGRAMS
79.165

LAND DATA SYSTEMS FOR TRANSPORT PLANNING IN UNDEVELOPED AREAS
80.066

LAND DATA SYSTEMS NOW. IMPLEMENTATION OF A MODERN MULTIPURPOSE LAND DATA SYSTEM. PROCEEDINGS OF THE SECOND MOLDS CONFERENCE, WASHINGTON, D.C. 5-7 OCT., 1978
79.226

LAND DATA SYSTEMS: THE NEXT STEPS
74.032

LAND DEPARTMENT LAND INVENTORY/PROPERTY MANAGEMENT SYSTEM. PRELIMINARY STUDY. PROJECT NO. 53
74.086

LAND DEPARTMENT LAND INVENTORY/PROPERTY MANAGEMENT SYSTEM. SYSTEM PROPOSAL. PROJECT NO. 53
74.087

A LAND EVALUATION MODEL (LEM): CONCEPT, DESIGN, AND APPLICATION
81.151

LAND GEOCODING AND URBAN DATA BANKS. (IN PRELIMINARY LAND STUDY ANCILLARY PAPERS)
71.067

LAND INDEX AND DISPLAY SUB-SYSTEM. INTERNAL REPORT
74.088

LAND INFORMATION INSTITUTE MEETING. FREDERICTON, N.B. JUNE, 1, 1979
79.227

LAND INFORMATION MANAGEMENT - A NEW COURSE FOR OLD SURVEYORS
81.131

LAND INFORMATION MANAGEMENT AT UNB
81.112

THE LAND INFORMATION MANAGEMENT CONCEPT
83.230

LAND INFORMATION MANAGEMENT: A NORTH AMERICAN PERSPECTIVE
83.228

TITLE INDEX

LAND INFORMATION SYSTEM FOR PLANNERS
74.070

LAND INFORMATION SYSTEMS
82.312

LAND INFORMATION SYSTEMS IN EDUCATION AND RESEARCH
82.207

LAND INFORMATION SYSTEMS IN THE CITY OF EDMONTON
82.265

LAND INFORMATION SYSTEMS: AN ANNOTATED BIBLIOGRAPHY
78.118

LAND LINE SURVEY DATA WITHIN A DIGITAL CARTOGRAPHIC DATA BASE
77.086

LAND MANAGEMENT INFORMATION IN NORTHWEST MINNESOTA
72.074

LAND ORIENTED REFERENCE DATA SYSTEM. BULLETIN 74
74.136

LAND ORIENTED WATER RESOURCES DATA SYSTEM IN NEW JERSEY
75.112

LAND OWNERSHIP INFORMATION
79.078

LAND PARCEL IDENTIFIERS AND THE UNIFORM LAND TRANSACTION ACT
74.049

LAND PARCEL IDENTIFIERS FOR INFORMATION SYSTEMS
73.105 73.098 73.097 73.071 73.065 73.050 73.019 73.017 73.014 73.010

LAND PARCEL IDENTIFIERS FOR INFORMATION SYSTEMS - PROBLEMS, PROSPECTS AND PAYOFFS
73.047

LAND PARCEL SYSTEMS: AN INFORMATION TOOL FOR POLICY PLANNING AND IMPLEMENTATION
77.176

THE LAND POTENTIAL DATA BASE FOR CANADA: USER'S HANDBOOK
83.097

THE LAND POTENTIAL DATA BASE FOR CANADA: USERS' HANDBOOK
83.096

LAND RECORDS AND COMPUTER ASSISTED ASSESSMENT
77.066

LAND RECORDS AND RESOURCE INFORMATION SYSTEMS: AN ASSESSMENT FROM AN ADMINISTRATIVE POINT OF VIEW
79.010

LAND RECORDS FUNCTION CONCEPT
72.026

LAND RECORDS INFORMATION SYSTEM: UTILIZATION BY THE STATE PROPERTY SYSTEM
76.081

LAND RECORDS MANAGEMENT IN NORTH CAROLINA
80.052

LAND RECORDS SYSTEMS CAN AND SHOULD BE MODERNIZED. SELECTED PAPERS FROM AMERICAN INSTITUTE OF PLANNERS 60TH ANNIVERSARY CONFERENCE, KANSAS CITY, MISSOURI, OCT. 12, 1977. IES REPORT 108
80.083

LAND RECORDS SYSTEMS IN FORSYTH COUNTY, N.C.
75.079

LAND RECORDS: COSTS, ISSUES AND REQUIREMENTS
80.023

LAND RECORDS: THE COST TO THE CITIZEN TO MAINTAIN THE PRESENT LAND INFORMATION BASE, A CASE STUDY OF WISCONSIN
78.102

LAND REGISTRATION AND INFORMATION SERVICE
79.161

LAND REGISTRATION AND INFORMATION SERVICE (LRIS). ESTABLISHMENT, PROGRAMS, FUNCTIONS
73.115

LAND REGISTRATION AND LEGAL SURVEYS: THE BASIC PROBLEM
71.036

LAND REGISTRATION IN THE UNITED STATES
70.004

LAND REGISTRATION SYSTEM: SYSTEM OBJECTIVES INTERNAL REPORT
72.073

TITLE INDEX

LAND REGISTRATION: A MARITIMES SYSTEM MAY TAKE THE WORLD TITLE
78.149

LAND RELATED INFORMATION SYSTEMS
79.177

LAND RESOURCE INFORMATION SYSTEM: A DEVELOPMENT AND DEMONSTRATION FOR THE STATE OF IOWA
74.047

LAND RESOURCE INFORMATION SYSTEM: A DEVELOPMENT AND DEMONSTRATION FOR THE STATE OF IOWA. FINAL REPORT 2
75.074

LAND RESOURCE INFORMATION SYSTEMS: A REVIEW OF FIFTEEN YEARS EXPERIENCE
79.063

LAND RESOURCE INFORMATION SYSTEMS: USE AND DISPLAY
77.057

LAND RESOURCE INFORMATION: POLICY AND TECHNICAL ISSUES
76.063

LAND SEMINAR PROCEEDINGS. INTERDEPARTMENTAL LAND SEMINAR. TWO VOLUMES. EDMONTON, ALTA. FEB. 17, 1972
72.003

LAND STATUS AUTOMATED SYSTEM (LSAS) PROJECT. FUNCTIONAL ANALYSIS PHASE: FINAL REPORT
80.036

LAND SUITABILITY MODEL FOR THE EVALUATION OF LAND-USE CHANGE
79.175

LAND SYSTEMS MAPPING AND FIELD PATTERN ANALYSIS IN AN AGRICULTURAL AREA, WYNYARD, SASKATCHEWAN
81.206

LAND TITLE RECORDS: COMPUTERIZING RECORDS ABOVE THE LOCAL LEVEL
76.030

LAND TITLES AND A CO-ORDINATE REFERENCE SYSTEM
75.201

LAND TITLES SYSTEM
79.129

LAND TREATMENT PROCESSES WITHIN CAPDET (COMPUTER ASSISTED PROCEDURE FOR THE DESIGN AND EVALUATION OF WASTE WATER TREATMENT SYSTEMS)
83.215

LAND UNIT IDENTIFICATION - AN ANALYSIS
76.180

LAND UNIT MAPPING WITH THE WILDLAND RESOURCE INFORMATION SYSTEM
75.009

LAND USE AND SPACE USE - DATA STANDARDIZATION ISSUES IN DATA BASE MANAGEMENT
82.202

LAND USE AND WATER SYSTEM PLANNING
80.020

LAND USE CAPABILITY ANALYSIS: A SELECTED BIBLIOGRAPHY
82.292

LAND USE CLASSIFICATION AND CODING. PART I
74.119

LAND USE CLASSIFICATION AND CODING. PART 1. APPENDICES
74.120

LAND USE CLASSIFICATION FOR LAND USE MONITORING
81.196

LAND USE CLASSIFICATION SYSTEMS: AN OVERVIEW
81.125

LAND USE CODING AND DATA NEEDS FOR PLANNING RESOURCE ALLOCATION
74.001

LAND USE DATA BASE SYSTEMS AND THE ASSESSOR: A WORD OF CAUTION
75.107

LAND USE IN NORTHERN MEGALOPOLIS
73.118

LAND USE IN URBAN AREAS.
82.138

LAND USE INFORMATION SERVICE
76.152

LAND USE INFORMATION SYSTEM
74.128

LAND USE INFORMATION SYSTEM FOR THE SANTA MONICA MOUNTAINS OF LOS ANGELES
74.073

LAND USE INFORMATION SYSTEMS IN THE MIDWEST
76.130

TITLE INDEX

LAND USE INVENTORY DESIGN: COMPONENT 6-11A AND 6-11B
70.019

LAND USE INVENTORY THROUGH MERGING OF LANDSAT (SATELLITE), AERIAL PHOTOGRAPHY, AND MAP SOURCES
77.196

LAND USE MANAGEMENT IN MINNESOTA. PROGRESS REPORT. SEPT 1ST - OCT 31ST, 1973
73.120

LAND USE MAPPING. INTERIOR REPORT
73.092

LAND USE MAPS IN BRITISH LOCAL PLANNING
75.236

LAND USE MONITORING IN THE URBAN CENTERED REGIONS OF CANADA AND THE CANADA LAND DATA SYSTEM
81.152

LAND USE PLANNING INFORMATION: BASIC CONSIDERATIONS
74.127

LAND USE POLICY AND PROGRAM ANALYSIS. NUMBER 2. DATA NEEDS AND RESOURCES FOR STATE LAND USE PLANNING
74.035

LAND USE RESOURCE INVENTORY SYSTEMS - INFORMATION PARADIGM
74.138

LAND USE STUDIES AT SOUTHERN CALIFORNIA EDISON: THE DEVELOPMENT AND USE OF A LAND USE ORIENTED PLANNING INFORMATION SYSTEM
77.067

LAND-BASED MODELLING SYSTEM FOR WATER QUALITY MANAGEMENT STUDIES
74.059

LAND-RELATED INFORMATION SYSTEMS (LRIS) AT THE CITY OF CALGARY
82.300

LAND-RELATED INFORMATION SYSTEMS COMPARISON: WORKING PAPER OF THE AD HOC COMMITTEE FOR THE DEMONSTRATION OF AN ALBERTA LAND-RELATED INFORMATION SYSTEM
76.108

LAND-RELATED INFORMATION SYSTEMS COORDINATION PROJECT: A NETWORK CONCEPT
81.175

LAND-USE PLANNING AIDED BY COMPUTER CELLULAR MODELLING/MAPPING SYSTEM TO COMBINE REMOTE SENSING, NATURAL RESOURCES, SOCIAL AND ECONOMIC DATA
74.111

LAND-USE PLANNING AIDED BY COMPUTER CELLULAR MODELLING/MAPPING SYSTEM TO COMBINE REMOTE SENSING, NATURAL RESOURCES, SOCIAL, ECONOMIC, AND CADASTRAL DATA
75.222

LAND-USE PLANNING: A VIEW FROM HOLLAND
76.164

LAND: STATE ALTERNATIVES FOR PLANNING AND MANAGEMENT
75.235

LANDSAT APPLICATION OF THE SOUTH DAKOTA LAND RESOURCE INFORMATION SYSTEM
77.206

LANDSAT CAPABILITY ASSESSMENT USING GEOGRAPHIC INFORMATION SYSTEMS
82.176

THE LANDSAT COMPUTER-COMPATIBLE TAPE FAMILY
82.005

LANDSAT DATA IS BEING USED TO IMPROVE HYDROLOGICAL MODELING
83.075

LANDSAT DIGITAL DATA FOR UPDATING GLACIOLOGICAL INFORMATION ON TOPOGRAPHIC AND GLACIER INVENTORY MAPS
83.121

LANDSAT FOR MONITORING THE CHANGING GEOGRAPHY OF CANADA
82.159

LANDSAT IMAGERY - A CARTOGRAPHIC REFERENCE BASE
78.148

LANDSAT IMAGES OF CANADA: A GEOLOGICAL APPRAISAL
81.121

LANDSAT INCREASES EFFICIENCY OF TOPOGRAPHIC MAP REVISION
82.218

LANDSAT LAND COVER ANALYSIS COMPLETED FOR CIRSS/SAN BERNARDINO COUNTY PROJECT
82.119

TITLE INDEX

LANDSAT MAPPING OF SNOW COVER TO IDENTIFY CRITICAL WILDLIFE WINTER RANGE
82.158

LANDSAT RANGE RESOURCE INFORMATION SYSTEM
81.105

LANDSAT 4 BAND 6 DATA EVALUATION
83.066

LANDSAT 4 INVESTIGATIONS OF THEMATIC MAPPER AND MULTISPECTRAL SCANNER APPLICATIONS
83.043

LANDSAT 4 TM-DATA: EXAMPLES OF RESOLUTION CAPACITY (LANDSAT 4 TM-DATA: EXEMPEL PA UPPLOESNINGSFOERMAGA)
83.035

LANDSAT-D THEMATIC MAPPER IMAGE DIMENSIONALITY REDUCTION AND GEOMETRIC CORRECTION ACCURACY
83.008

LANDSAT-MSS IMAGERY - A THEMATIC MAPPING BASE
76.002

LANDSAT-4 THEMATIC MAPPER MODULATION TRANSFER FUNCTION (MTF) EVALUATION
83.005

LANDSAT: COMPUTER ASSISTED INVENTORY & MAPPING OF WETLANDS IN WESTERN CANADA
83.226

LANDSAT: DERIVED LAND USE DATA AS AN INPUT TO GEOGRAPHIC INFORMATION SYSTEMS
77.134

LARGE AREA CROP INVENTORY EXPERIMENT (LACIE). LEVEL 3 BASELINE: CLASSIFICATION AND MENSURATION SUBSYSTEM (CAMS) REQUIREMENTS, VOLUME 2, REVISION E (LACIE-C00200)
78.123

LARGE AREA CROP INVENTORY EXPERIMENT (LACIE). LEVEL 3 BASELINE: INFORMATION STORAGE, RETRIEVAL, AND REFORMATTING SUBSYSTEM (ISRRS) REQUIREMENTS (LACIE-C00200-VOL-5-REV-A)
75.170

LARGE AREA CROP INVENTORY EXPERIMENT (LACIE). LEVEL 3 BASELINE: LACIE OPERATIONS PLAN (LACIE-C00602)
75.169

LASER SCANNING: TECHNOLOGY AND APPLICATIONS.
82.141

LASER SCANNING: TECHNOLOGY AND APPLICATIONS. 1972-MARCH, 1983 (CITATIONS FROM THE INTERNATIONAL AEROSPACE ABSTRACTS DATA BASE)
83.094

LASERSCAN FASTRAK AUTOMATIC DIGITIZING SYSTEM
78.082

LECTURE NOTES ON SOCIO-POLITICAL PROBLEMS OF ESTABLISHING CADASTRE NEED
74.099

LEGAL DESCRIPTIONS AND THEIR USE IN DEVELOPING A CADASTRE
75.101

LEGAL MEASURES AS A PREREQUISITE OF A MODERNIZED LAND DATA SYSTEM
75.203

LEGAL PROBLEMS IN ESTABLISHING BOUNDARIES FOR A CADASTRE
75.234

LEGAL PROBLEMS IN THE IMPLEMENTATION OF A MULTIPURPOSE LAND BASED FISCAL DATA SYSTEM
79.202

LEGAL PROBLEMS IN THE IMPLEMENTATION OF A MULTIPURPOSE LAND DATA SYSTEM
79.139

A LEGISLATOR'S GUIDE TO LANDSAT
82.037

LESSONS TO BE LEARNED FROM REVIEW OF EXISTING SYSTEMS AND DIGITIZING METHODS. CHAPTER 3
76.157

LIMITATIONS OF LANDSAT IMAGERY FOR THEMATIC URBAN MAPPING
83.126

LINEAR OCT-TREES FOR FAST COMPUTER PROCESSING FOR THREE DIMENSIONAL OBJECTS
82.247

LINEAR OPERATIONS APPLIED TO AERIAL DATA
75.241

LINEAR QUAD- AND OCT-TREES: THEIR USE IN GENERATING SIMPLE ALGORITHMNS FOR IMAGE PROCESSING
82.246

TITLE INDEX

LINKING INVENTORIES
79.128

LINKING POSTAL CODES TO 1981 CENSUS DATA
80.056

LINKING THE LAND RECORDS SYSTEM TO THE ENVIRONMENTAL IMPACT STATEMENT
76.072

LITHIUM DATA BASES AND RESOURCE ESTIMATES: PROBLEMS AND POTENTIALS
76.046

LOCAL GOVERNMENT AND INFORMATION TECHNOLOGY
82.294

LOCAL GOVERNMENT EFFICIENCY REVIEW
75.091

LOCAL VERSUS GLOBAL - THE SCOPE OF MEMORY REQUIRED FOR GEOGRAPHIC INFORMATION PROCESSING
77.046

LOCATION IDENTIFICATION. PART 2
74.121

LOCATION IDENTIFIERS
71.075

LOCATION OF TITLE
79.083

LOGICAL AND PHYSICAL DATA TYPES IN GEOGRAPHICAL INFORMATION SYSTEMS
79.030

LOIS AND LORDS - TWO NEW LAND-USE INFORMATION SYSTEMS FOR NEW JERSEY
75.117

LOIS-LAND ORIENTED INFORMATION SYSTEM - A DATA RESOURCE FOR PLANNING
73.102

LOIS: LAND ORIENTED INFORMATION SYSTEM - A DATA RESOURCE FOR PLANNING
73.122

LOOKING AT COMPUTER CAROTGRAPHY
82.267

LOS ANGELES COUNTY DATA FILES GEOCODING WITH ADMATCH AND THEIR APPLICATIONS
70.020

LOUISIANA ENVIRONMENTAL MANAGEMENT SYSTEM AND ITS UTILITY IN WATER RESOURCE PLANNING
75.265

LOW COST COMPUTER GRAPHICS IN ENGINEERING EDUCATION
81.190

A LOW COST IMAGE COMPRESSION TEST BED SYSTEM
83.134

LOW VOLUME DIGITIZING
72.061

LOW-COST COMPUTERIZED LAND-USE CLASSIFICATION
74.124

LOW-COST DIGITAL PROCESSING SYSTEM FOR LAND DATA
79.192

LRIS GOES INTERNATIONAL
81.113

LUIS: AN INTERACTIVE GRAPHICS SYSTEM USED FOR DATA BASE MANAGEMENT IN A REGIONAL PLANNING ENVIRONMENT
79.143

LUMIS INTERACTIVE GRAPHICS OPERATING INSTRUCTIONS AND SYSTEM SPECIFICATIONS
76.031

LUMIS: LAND USE MANAGEMENT AND INFORMATION SYSTEMS: COORDINATE ORIENTED PROGRAM DOCUMENTATION
76.032

LUNR (LAND USE AND NATURAL RESOURCE INVENTORY OF NEW YORK STATE): WHAT IT IS AND HOW IT IS USED
72.033

LUNR CLASSIFICATION MANUAL
72.089

M.T.C. (MINISTRY OF TRANSPORTATION AND COMMUNICATIONS) DIGITAL MAPPING SYSTEM
78.161

MACHINE MAPPING VIA POSTAL ZIP CODE NUMBERS
79.217

MAIN CHARACTERISTICS OF THE LAND RECORD SYSTEM IN SWEDEN
75.012

MAKING MAPS BY COMPUTER
77.105

MANAGEMENT OF NATURAL RESOURCES THROUGH AUTOMATIC CARTOGRAPHIC INVENTORY. PROGRESS REPORT AUG.72-JAN.73
73.113

MANAGEMENT OF NATURAL RESOURCES THROUGH AUTOMATIC CARTOGRAPHIC INVENTORY. PROGRESS REPORT NO. 1, AUG-SEP 72
72.005

MANAGEMENT OF SPATIALLY REFERENCED DATA
81.004

MANAGEMENT OF SPATIALLY REFERENCED DATA: CONCEPTUAL STUDY OF BASIC REQUIREMENTS AND STRUCTURE
81.079

MANAGEMENT STUDY REVIEW
74.053

MANAGEMENT'S USE OF MAPS: COMMERCIAL AND POLITICAL APPLICATIONS. VOLUME 1
79.141 79.094 79.065

MANAGING NATURAL RESOURCE DATA: MINNESOTA LAND MANAGEMENT INFORMATION SYSTEM
77.120

MANIPULATING DATA STRUCTURES IN PICTORIAL INFORMATION SYSTEMS
81.174

MANIPULATION OF RASTER DATA
75.100

THE MANIPULATION OF RASTER-BASED TOPOGRAPHIC DATA ON A PARALLEL PROCESSOR
82.272

MANIPULATION PROCESSES IN COMPUTER CARTOGRAPHY
78.020

MANITOBA LAND-RELATED DATA INFORMATION SYSTEMS: STUDY REPORTS
77.155

MANUAL OF REMOTE SENSING
82.242

MANUAL OF REMOTE SENSING 2ND EDITION. THEORY, INSTRUMENTS AND TECHNIQUES (VOL. 1). INTERPRETATION AND APPLICATIONS (VOL. 2)
83.098

MANUAL ON POINT REFERENCING PROPERTIES AND PARCELS OF LAND: TECHNIQUES FOR PLANNING
73.022

MAP AND CHART INFORMATION STORAGE AND RETRIEVAL
79.219

MAP EDITING USING A TOPOLOGICAL ACCESS SYSTEM
75.264

MAP GENERALIZATION: THEORY, PRACTICE AND ECONOMICS
75.164

MAP INDEXING SYSTEM USER'S MANUAL
78.135

MAP PROJECTION FOR USE IN A LAND RECORDS SYSTEM
75.033

MAP READING: AN INTERACTIVE APPROACH
80.001

MAP SESSION USING DIGITAL TECHNIQUES
75.199

MAPCOUNT SERIES OF PROGRAMS FOR ANALYSIS AND MANIPULATION OF SYMAP RESULTS
79.018

MAPEDIT SYSTEM FOR AUTOMATIC MAP DIGITIZATION
74.068

MAPPER
81.071

MAPPING · A SYSTEMATIC APPROACH
83.061

A MAPPING AND RESOURCE ANALYSIS SYSTEM (MARS) AT THE NORTHERN FOREST RESEARCH CENTRE
82.279 82.213

MAPPING APPLICATIONS OF VIDEO DISC TECHNOLOGY
83.065

MAPPING OFFSHORE OIL LEASES
78.141

MAPPING SOFTWARE AND CARTOGRAPHIC DATA BASES. VOLUME 2
79.221 79.217 79.214 79.213 79.208 79.200
79.190 79.188 79.151 79.150 79.146 79.140
79.110 79.102 79.098 79.096 79.095 79.088
79.084 79.080 79.076 79.067 79.060 79.059
79.052 79.028 79.026 79.018 79.016 79.012

MAPPING SOILS WITH ALICE
76.187

MAPPING THE ATHABASCA GLACIER, ALBERTA, CANADA, BY ORTHOPHOTOGRAPHY AND BY CONVENTIONAL METHODS
78.182

TITLE INDEX

MAPPING THE URBAN INFRASTRUCTURE
82.203

MAPPING WITH COMPUTERS
74.081

MAPPING, CHARTING & GEODESY AT THE DEFENSE MAPPING AGENCY
83.045

MAPS BY LINE PRINTER
75.062

MAPS: THE ORGANIZATION OF A SPATIAL DATABASE SYSTEM USING IMAGERY, TERRAIN, AND MAP DATA
83.085

MARITIME CADASTRAL ACCURACY STUDY. FINAL REPORT
77.049

MARITIME PROVINCES EXPERIENCE IN LAND REGISTRATION VIA COMPUTER
75.204

MARITIME PROVINCES MAPPING AND LAND REGISTRATION PROGRAMME
70.041

MARYLAND AUTOMATED GEOGRAPHIC INFORMATION (MAGI) SYSTEM
74.118 74.041

MARYLAND AUTOMATED GEOGRAPHIC INFORMATION SYSTEM: EXPANSIONS AND APPLICATIONS IN STATE GOVERNMENT
79.004

MARYLAND WILDLIFE RESOURCES INFORMATION RETRIEVAL SYSTEM
79.005

MASTER SCOPE DOCUMENT. DRAFT
80.040

MATCHING EDGES IN MAPS AND AERIAL IMAGES USING THE CHAMFER MATCHING ALGORITHM
83.017

MATCHING LINEAR FEATURES OF IMAGES AND MAPS
82.021

MATCOG INFORMATION SYSTEM
72.034

A MATHEMATICAL EVALUATION OF SIMPLIFICATION ALGORITHMS
83.110

MATHEMATICAL MODELING AND PARAMETER IDENTIFICATION IN A TWO-DIMENSIONAL ESTUARY: CASE STUDY OF THE HYDRAULIC MODEL OF THE SAN FRANCISCO BAY AND DELTA
81.205

MATHEMATICAL STRUCTURE FOR CARTOGRAPHIC MODELING IN ENVIRONMENTAL ANALYSIS
79.201

MATHEMATICAL TECHNIQUES FOR AUTOMATED CARTOGRAPHY
73.076

MATRIX DATA ANALYSIS: COLOR/B&W CODING IS NOT ALWAYS ENOUGH
81.017

MEANING AND CONSTRUCTION OF A GEOGRAPHIC BASE FILE FOR A SPATIALLY ORIENTED INFORMATION SYSTEM
82.016

THE MEANING AND CONSTRUCTION OF A GEOGRAPHIC BASE FILE FOR A SPATIALLY ORIENTED INFORMATION SYSTEM
82.277

MEASUREMENT AND MAPPING OF LAND-RESOURCE DATA BY POINT SAMPLING ON AERIAL PHOTOGRAPHS. PAPER 6
74.004

MEASURING THE FRACTAL DIMENSIONS OF EMPIRICAL CARTOGRAPHIC CURVES
82.035

MEASURING THE FRACTAL DIMENSIONS OF SURFACES
83.026

MEDIUM-SCALE AND LARGE SCALE SURVEYING AND MAPPING CADASTRAL SURVEYING AND MAPPING. REPORT OF THE MEETING OF THE AD HOC GROUP OF EXPERTS ON CADASTRAL SURVEYING AND MAPPING
74.016

MEETING SOCIAL SCIENCE AND SOCIAL DECISION-MAKERS' NEEDS FOR SMALL AREA DATA
72.044

METHODOLOGY OF COMPUTER-ASSISTED CARTOGRAPHY
75.278

METHODS AND COSTS OF GEOCODING 1971 CENSUS RETURNS TO A RESOLUTION OF ONE METRE: REPORT ON THE JOINT MHLG AND OPCS FEASIBILITY STUDY
70.002

TITLE INDEX

METHODS FOR GENERATING LAND SUITABILITY MAPS: A COMPARATIVE EVALUATION
77.122

METHODS FOR INTERPRETING PERSPECTIVE IMAGES
82.116

METHODS OF MANIPULATING GEO-CODED DATA THROUGH SOCIAL INDICATORS FOR USE IN SIMULATION MODELLING AND DECISION TAKING
78.131

METHODS TO DETERMINE GEOGRAPHIC/POPULATION BOUNDARIES FOR SPECIFIC HEALTH SERVICES. ADDENDUM TO DRAFT STATE-OF-THE-ART REPORT
78.069

METROCOM: HOUSTON'S GEOGRAPHIC INFORMATION MUNICIPAL MANAGEMENT SYSTEM
83.169 83.153

METROPOLITAN PLANNING DATA FROM LOCAL GOVERNMENTS: A DEMONSTRATION OF LAND USE DATA COMPATIBILITY
70.034

MICRO MAP SYSTEM (MMS): LOW COST, ON-LINE GBF/DIME MAINTENANCE
77.236

MICROCOMPUTER BASED SPATIAL INFORMATION SYSTEM
82.090

MICROCOMPUTER GEOPROCESSING AS A MINIMUM TECHNOLOGY SOLUTION FOR DATA MANAGEMENT IN DEVELOPING COUNTRIES
81.145

A MICROCOMPUTER SUPPORTED REGIONAL PROFILE INFORMATION SYSTEM FOR THE '80'S
81.140

MICROGRAPHICS: A NEW APPROACH TO AUTOMATED CARTOGRAPHY AND GRAPHICS
74.108

MICROGRAPHICS: A NEW APPROACH TO CARTOGRAPHY AT THE CENSUS BUREAU
73.023

MICROPROCESSOR BASED CARTOGRAPHY FOR URBAN INFORMATION SYSTEMS
82.187

MIGS: A MICROCOMPUTER MAPPING SYSTEM FOR CARTOGRAPHY IN DEVELOPING NATIONS
83.201

MILUS (MULTIPLE INPUT LAND USE SYSTEM)
75.042

MILWAUKEE COMPUTER GRAPHICS SYSTEM PRE-IMPLEMENTATION PHASE
77.126

MILWAUKEE COMPUTER GRAPHICS SYSTEM: THE GRAPHICS INQUIRY CAPABILITY
78.087

MINES AND MINERAL RESOURCES - ELECTRONIC DATA PROCESSING
81.114

MINI RASTER-TO-VECTOR CONVERSION
81.012

MINI-KAT: A LOW-COST INTERACTIVE GRAPHICS SYSTEM
83.145

MINICOMPUTER GRAPHICS FOR THE UNIVERSITY OF WISCONSIN CARTOGRAPHY LABORATORY
78.169

MINICOMPUTER-BASED LAND USE INFORMATION SYSTEM
77.208

MINING, LAND USES, AND THE ENVIRONMENT: A CANADIAN OVERVIEW
82.316

MINNESOTA LAND INFORMATION SYSTEM
71.054

MISSISSIPPI LAND RESOURCES INVENTORY STATE LAND USE MAPPING PROJECT
77.071

MODEL OF A HORIZONTAL CONTROL NETWORK FOR INTEGRATED URBAN SURVEYS
72.025

MODELLING AND SIMULATION
82.270

MODERN CADASTRE IN A DEVELOPING COUNTRY
75.098

MODERN CADASTRE IN A HIGHLY DEVELOPED COUNTRY
75.135

MODERN CADASTRE IN A HIGHLY DEVELOPED COUNTY
75.022

TITLE INDEX

MODERN COMPUTERIZED SYSTEM OF LAND RECORDS
73.046

MODERN LAND RECORDS SYSTEM FOR PROPERTY TAX ASSESSMENT IN MAINE
76.113

MODERN LAND RECORDS SYSTEM: THE CANADIAN MARITIME EXAMPLES
80.016

MODERN TECHNOLOGY IN CADASTRAL OPERATION IN DEVELOPING COUNTRIES
80.045

MODERNIZATION OF LAND DATA SYSTEMS - INTRODUCTION
75.129

MODERNIZATION OF LAND RECORDS SYSTEM IN NORTH CAROLINA
75.046

MODERNIZATION OF LOCAL RECORD KEEPING OF LAND TITLE INFORMATION
76.039

MODERNIZATION OF THE PUBLIC LAND SURVEY SYSTEM
82.025

MODERNIZING LAND DATA SYSTEMS
74.069

A MODIFICATION OF THE NON-CONTIGUOUS CARTOGRAM
83.203

MONITORING AIRBORNE HEALTH IMPACTS THROUGH SPATIAL CROSSTABULATION TECHNIQUES: THE IBIS APPROACH
78.106

MONITORING LAND AND WATER USE DYNAMICS IN COLUMBIA PLATEAU USING REMOTE SENSING COMPUTER ANALYSES AND INTEGRATION TECHNIQUES
82.258

MONITORING LAND AND WATER USES IN THE COLUMBIA PLATEAU USING REMOTE-SENSING COMPUTER ANALYSIS AND INTEGRATION TECHNIQUES
83.067

MONITORING THE MARITIME PROVINCES LAND REGISTRATION AND INFORMATION SERVICE (A PHILOSOPHICAL OVERVIEW)
73.091

MONITORING THE PATTERN AND PERFORMANCE OF LAND USE ALLOCATION SYSTEMS IN THE CITY OF BRIDGEPORT. FINAL REPORT
76.144

THE MOST PREDICTABLE SURFACE (MPS) MAPPING METHOD IN PETROLEUM EXPLORATION
81.158

MULITIPLE DATA STRUCTURES IN A REGIONAL DATA BASE
83.108

MULTI-DIMENSIONAL MAPS THROUGH DIGITAL IMAGE PROCESSING
75.025

MULTI-PURPOSE LAND DATA SYSTEM FOR MANAGING LAND AND ENVIRONMENT
79.043

MULTI-PURPOSE LAND PARCEL DATA SYSTEMS
75.166

MULTILINGUAL EXPLANATORY DICTIONARY OF AUTOMATION IN CARTOGRAPHY: MANUSCRIPT TWO VOLUMES
76.058

MULTIPURPOSE CADASTRE: THE NEED, THE EXISTING COSTS, THE CRITERIA, AND THE IMPLEMENTATION RECOMMENDATIONS
80.084

MULTIPURPOSE LAND DATA SYSTEM LEGAL PARCEL
77.059

MULTIPURPOSE LAND INFORMATION SYSTEMS: A CANADIAN PERSPECTIVE
82.076

MULTIPURPOSE LAND INFORMATION-SYSTEMS - A CANADIAN PERSPECTIVE (EN)
82.078

MULTIRESOURCE INVENTORIES--A NEW CONCEPT FOR FOREST SURVEY IN THE SOUTHEAST
79.138

N.Y.C. LOCAL AREA PLANNING DATABASE
77.013

NAPLPS: A NEW STANDARD FOR TEXT AND GRAPHICS. IV. MORE ADVANCED FEATURES AND CONCLUSIONS
83.060

NARI: A NATURAL RESOURCE INFORMATION SYSTEM
72.035

NATIONAL COAL RESOURCES DATA SYSTEMS OF THE U.S. GEOLOGICAL SURVEY
76.036

TITLE INDEX

THE NATIONAL DIGITAL CARTOGRAPHIC PROGRAM OF THE U.S. GEOLOGICAL SURVEY
83.168

NATIONAL ENVIRONMENTAL INFORMATION SYSTEM FOR LOCAL DECISION MAKERS
77.201

NATIONAL FORESTS - BETTER PLANNING NEEDED TO IMPROVE RESOURCE MANAGEMENT
78.163

NATIONAL GEOCODING
74.132

NATIONAL GEOCODING CONFERENCE PROCEEDINGS
72.106

NATIONAL GEOCODING CONVERTER FILE 1. VOLUMES 1-3
72.107

NATIONAL GEOCODING SYSTEM
73.011

NATIONAL GEOCODING SYSTEMS: DESIGN OF A CONVERTER
76.169

NATIONAL GEODETIC SURVEY CONTRIBUTION TO MODERN LAND DATA SYSTEMS
77.168

NATIONAL OCEAN SURVEY'S CARTOGRAPHIC DATA BASE FORECASTS
78.032

NATIONAL REFERENCE SYSTEM AND ITS RELATIONSHIP TO MAPPING
70.018

NATIONAL STANDARDS FOR THE EXCHANGE OF DIGITAL TOPOGRAPHIC DATA
82.003

NATIONWIDE ANALYSIS. APPENDIX L. TOWARD A STRUCTURED ECOLOGICAL DATA BASE
76.161

NATURAL RESOURCE GEOGRAPHIC DATA BASES FOR MONTANA AND WYOMING
77.204

NATURAL RESOURCE INFORMATION SYSTEM. REMOTE SENSING STUDIES. FINAL REPORT
72.062

NATURAL RESOURCE INFORMATION SYSTEM. VOLUMES 1 AND 2. OVERALL DESCRIPTION AND SYSTEM OPERATING PROCEDURES AND INSTRUCTIONS - FINAL REPORT
72.014

NATURAL RESOURCES INFORMATION DIRECTORY
82.304

NATURAL RESOURCES INFORMATION SYSTEM. DESIGN ANALYSIS
72.013

NATURAL RESOURCES INVENTORY AND LAND EVALUATION IN SWITZERLAND
75.110

NATURE
81.179

NATURE AND STRUCTURE OF THE INFORMATION IN THE EARTH SCIENCES, SOME THEORETICAL AND PRACTICAL (FILES AND DATA BANKS) ASPECTS
76.076

NAUTICAL CHARTING AND THE COMPUTER
77.091

NAVIGATING ODYSSEY
77.084

NAVSTAR GLOBAL POSITIONING SYSTEM
82.145 82.131 82.124

NAVSTAR GLOBAL POSITIONING SYSTEM AND A FIRST ORDER FRAMEWORK FOR INFORMATION SYSTEMS
76.171

NAVSTAR GLOBAL POSITIONING SYSTEM. 1970-JULY, 1983 (CITATIONS FROM THE NTIS DATA BASE)
83.087

NAVSTAR GLOBAL POSITIONING SYSTEM. 1972-JULY, 1983 (CITATIONS FROM THE INTERNATIONAL AEROSPACE ABSTRACTS DATA BASE)
83.086

NAVSTAR GLOBAL POSITIONING SYSTEM. 1977-OCTOBER, 1983 (CITATIONS FROM THE INTERNATIONAL INFORMATION SERVICE FOR THE PHYSICS AND ENGINEERING COMMUNITIES DATA BASE)
83.079

NEIGHBOR-FINDING TECHNIQUE FOR IMAGES REPRESENTED BY QUADTREES
82.239

NEIGHBORHOOD COMPUTATION FOR LARGE SETS OF DATA POINTS
75.039

THE NEIGHBOURHOOD - ONE APPROACH TO ANALYSING IT
81.144

TITLE INDEX

NEW APPROACH TO LAND REGISTRATION AND INFORMATION
76.055

NEW DEVELOPMENTS IN GEO-CARTO-GRAPHICS AT STATISTICS CANADA
78.043

NEW DEVELOPMENTS IN THE CANADA GEOGRAPHIC INFORMATION SYSTEM
78.108

NEW GENERALIZED SOIL MAPS GUIDE LAND USE PLANNING IN MARYLAND
76.131

NEW LAND BANK IN SWEDEN
70.055

NEW METHOD OF POLYGON OVERLAY
77.239

NEW ODYSSEY BEGUN
79.107

NEW TECHNIQUES IN MAPPING URBAN LAND USE AND MONITORING CHANGE FOR SELECTED U.S. METROPOLITAN AREAS: AN EXPERIMENT EMPLOYING COMPUTER-ASSISTED ANALYSIS OF ERTS-1 MSS DATA
74.054

NEW TECHNOLOGY FOR MAPPING. TECHNICAL PAPERS FROM COMMISSION 4. PROCEEDINGS INTERNATIONAL SYMPOSIUM. OTTAWA, ONT., OCT. 2-6, 1978
78.029

NEW YORK STATE REAL PROPERTY VALUATION SYSTEM
75.049

NEXT STEP: COMPATIBLE IDENTIFIERS
71.029

NON-ACADEMIC INTEREST IN AUTOMATED CARTOGRAPHY
80.019

NON-LINEAR PROPERTY THE VALUATION MODEL
75.221

NORMALIZED QUAD-TREES WITH RESPECT TO TRANSLATIONS
82.248

NORTH AMERICAN CONFERENCE ON MODERNIZATION OF LAND DATA SYSTEMS-A MULTI-PURPOSE APPROACH
75.270

NORTH AMERICAN LAND INFORMATION SYSTEMS: AN OVERVIEW WITH RECOMMENDATIONS
77.052

NORTH CAROLINA'S LAND RECORDS MANAGEMENT PROGRAM: PROGRESS TOWARD COUNTY CADASTRES
83.149

NORTH SLOPE BOROUGH EMBARKS ON MASSIVE COMPUTER MAPPING PROJECT ARCTIC POLICY REVIEW
82.238 82.114

NOTE: AN ALGORITHM FOR FILLING REGIONS ON GRAPHICS DISPLAY DEVICES
83.216

NSB EMBARKS ON A MASSIVE COMPUTER MAPPING PROJECT
82.311

NUMERICAL APPROACH TO TERRAIN ANALYSIS FOR OFF-ROAD TRAFFICABILITY
79.185

NUMERICAL CADASTRAL SURVEY
79.111

NUMERICAL IMAGE INTERPRETATION IN FOREST INVENTORY AND MENSURATION
83.051

OAK RIDGE REGIONAL MODELING INFORMATION SYSTEM (ORRMIS), PART 1
74.050

OASIS
78.025

OBSERVATIONS AND TRENDS IN DIGITAL CARTOGRAPHY 1982
83.211

ODIS VS CUE: A LOOK AT DIME FILE MAINTENANCE
75.134

ODIS: AN ON-LINE DIME IMPLEMENTATION SYSTEM
77.143

ODYSSEY DESIGN STRUCTURE
79.214

ODYSSEY FILE SYSTEM
78.116

OFFICIAL LEGAL SIGNIFICANCE OF THE PARCEL IDENTIFIER
73.012

TITLE INDEX

OHIO CAPABILITY ANALYSIS PROGRAM AND ITS APPLICATION IN STARK COUNTY, OHIO
77.161

OIL AND GAS FIELD STUDY
72.049

OIL AND GAS INFORMATION SYSTEM
79.222

OMAHA SEWER INVENTORY-MANAGEMENT PROGRAM - A GEOPROCESSING APPLICATION
82.204

ON CAMS, A COMPUTER AUGMENTED MAPPING SYSTEM FOR THE PRODUCTION OF THEMATIC MAPS
75.115

ON THE APPLICATION OF SOFTWARE ENGINEERING METHODOLOGY TO THE DEVELOPMENT OF GEOGRAPHIC INFORMATION SYSTEMS
82.154

ON THE DEVELOPMENT OF A THEORY OF TRAVELLER ATTITUDE-BEHAVIOR INTERRELATIONSHIPS. VOLUME 3
78.033

ON THE ECONOMICS OF CADASTRAL INFORMATION SYSTEMS
76.095

ON THE R&D OF THE URMAP SYSTEM: A COMPUTER AIDED DECISION ENHANCEMENT URBAN MANAGEMENT AND PLANNING METHODOLOGY N
82.190

ON THE TRANSFER OF REMOTE SENSING CLASSIFICATIONS INTO POLYGON GEOCODED DATA BASES IN CANADA
83.130

ON THE URMAP SYSTEM: ENHANCEMENT OF DECISION PROCESS IN URBAN MANGEMENT PLANNING WITH APPLICATIONS
82.189

ON-DEMAND COMPUTER CARTOGRAPHY AND ITS EFFECT ON MAP LIBRARIES
78.012

ONSITE, THE ONLINE SITE EVALUATION SYSTEM
75.285

ONTARIO BASIC MAPPING SYSTEM
78.074

ONTARIO HYDRO'S CARSS SYSTEM
83.180

ONTARIO HYDRO'S COMPUTER ASSISTED ROUTE AND SITE SELECTION SYSTEM
80.058

ONTARIO INSTITUTE OF LAND SURVEYORS ANNUAL REPORT
70.040

OPEN DISCUSSION - WHITHER BY 1984
76.151

OPERATING SYSTEMS PANEL
76.060

OPERATIONAL ENGLISH DIALOGUE SYSTEM FOR STATE-WIDE INTEGRATION OF POLYGON AND LANDSAT DATA
79.149

OPERATIONAL MAPPING OF ALL BURNED FOREST LAND IN THE NORTHWEST TERRITORIES WITH SATELLITE IMAGERY
83.212

OPERATIONAL MULTI-PURPOSE CADASTRE
76.121

OPTICAL CHARACTER RECOGNITION FOR AUTOMATED CARTOGRAPHY: THE ADVANCED DEVELOPMENT HANDPRINTED SYMBOL RECOGNITION SYSTEM
83.030

OPTIMAL QUAD-TREES FOR IMAGE SEGMENTS
83.099

OPTIMIZING RASTER STORAGE: AN EXAMINATION OF FOUR ALTERNATIVES
83.196

ORGANIZATION OF GEOGRAPHIC DATA WITH QUAD TREES AND LEAST SQUARE APROXIMATIONS
82.250

ORGANIZATION STRUCTURE OF A LAND RECORDS SYSTEM
75.078

ORGANIZATIONAL SOLUTION TO AN INTEGRATED MULTIPURPOSE CITY SURVEYING SYSTEM
71.045

ORGANIZATIONAL STRUCTURES FOR CONSTANT RESOLUTION EARTH DATA BASES. FINAL REPORT
73.016

ORGANIZING THE CLEVELAND LAND DATA SYSTEM AROUND MICROCOMPUTERS
83.150

TITLE INDEX

ORTHOGONAL THREE-DIMENSIONAL VIEWS FOR THEMATIC MAPPING
83.221 83.119

ORTHOGONAL-POLYNOMIAL CONTOURED TREND-SURFACE MAPS FOR IRREGULARLY-SPACED DATA. TECHNICAL REPORT
74.135

ORTHOPHOTOMAPS OF GLACIERS, AN ELEVATION OF AN AUTOMATED METHOD APPLIED TO PEYTO GLACIER, ALTA.
77.253

OS ADMATCH
72.057

OTTAWA CONFERENCE ON CONCEPTS OF A MODERN CADASTRE
75.271 75.030

OUTLINE OF A DATA BANK SYSTEM FOR NATIONAL AND REGIONAL PLANNING
75.111

OUTPUT DEVICES PANEL
76.034

OUTSTANDING HARDWARE PROBLEMS PANEL
76.026

OVERLAY: A RELATIONAL DATA BASE MANAGEMENT SYSTEM FOR SPATIAL ANALYSIS
83.190

OVERVIEW OF A SURVEY-BASED SYSTEM FOR IMPROVING DATA COMPATIBILITY IN LAND RECORD SYSTEMS
81.150

OVERVIEW OF AUTOMATED CARTOGRAPHY EFFORTS AT DMAAC
82.056

OVERVIEW OF COMPUTER MAPPING AND GRAPHIC APPLICATIONS USING PUBLIC DATA FILES
75.158

AN OVERVIEW OF REMOTE SENSING INPUT TO GEOGRAPHIC INFORMATION SYSTEMS
81.182

OVERVIEW OF THE CANADA GEOGRAPHIC INFORMATION SYSTEM (CGIS)
80.042

OVERVIEW OF THE LBL SOCIO ECONOMIC ENVIRONMENTAL DEMOGRAPHIC INFORMATION SYSTEMS (SEEDIS)
75.014

OVERVIEW OF THE ODYSSEY GEOGRAPHIC INFORMATION PROCESSING SYSTEM
78.156

AN OVERVIEW OF THE THEMATIC MAPPER GEOMETRIC CORRECTION SYSTEM
83.028

OVERVIEW: SWEDEN
72.011

PACER-DATA ENTRY, RETRIEVAL, AND UPDATE FOR THE NATIONAL COAL RESOURCES DATA SYSTEM (PHASE I)
76.033

PANEL ON HUMAN PROBLEMS OF CONVERSION FROM MANUAL TO AUTOMATED METHODOLOGIES: IN THE SHOP AND IN THE MARKETPLACE
77.188

PAPERS IN SPATIAL INFORMATION SYSTEMS
82.295

PAPERS SELECTED FOR PRESENTATION AT THE INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT (16TH) HELD AT BUENOS AIRES, ARGENTINA ON 2-9 JUNE 1982
82.049

PARCEL CENTROIDS VERSATILITY IN THE URBAN DEVELOPMENT INFORMATION SYSTEM (UDIS)
73.002

PARCEL GEOCODING SYSTEM FOR URBAN AND REGIONAL INFORMATION
72.097

PARCEL GEOCODING SYSTEM FOR URBAN AND RURAL INFORMATION
73.125 70.047

PARCEL IDENTIFICATION AND DATA SYSTEM: A CASE STUDY IN IMPLEMENTING INFORMATION SYSTEM
74.094 74.091

PARCEL IDENTIFIER NEEDS FOR ADMINISTRATION-RELATED ACTIVITY
73.094

PARCEL IDENTIFIER NEEDS FOR ENGINEERING-RELATED ACTIVITY
73.010

PARCEL IDENTIFIER NEEDS FOR LAND USE RELATED ACTIVITY
73.050

TITLE INDEX

PARCEL IDENTIFIERS FOR MODERN LAND INFORMATION SYSTEMS
74.085

PARCEL INDEX MAPS: SOME CONSIDERATIONS
73.019

PATTERN RECOGNITION AND IMAGE PROCESSING
82.251 82.250

PENNSYLVANIA. PLANNING REGION 2 GEOCODING REPORT
70.038

PERFORMANCE ANALYSIS OF COMPACTION TECHNIQUES FOR MAP REPRESENTATION IN GEOGRAPHIC DATABASES
82.289

PERFORMANCE MODELS OF DISTRIBUTED DATABASE SYSTEMS
81.106

PERFORMANCE OF A TOPOLOGICAL FILE ACCESS SYSTEM
77.241

PERFORMANCE OF RASTER SCANNING AND PROCESSING OF CARTOGRAPHIC DATA WITH THE MBB-KONGSBERG SYSSCAN SYSTEM
81.139

PERSPECTIVES IN THE ALTERNATIVE CARTOGRAPHY: CARTOGRAPHIC COMPUTING TECHNOLOGY AND ITS APPLICATION
82.233

PERSPECTIVES ON GEOGRAPHIC ASPECTS OF INFORMATION SYSTEMS. ANNUAL MEETING OF THE ASSOCIATION OF AMERICAN GEOGRAPHERS, SPECIAL SESSION - GEOGRAPHIC RESEARCH IN AN INFORMATION SYSTEMS CONTEXT. KANSAS CITY, MO. APR. 24, 1972
72.113

PETROLEUM RESOURCE DATA SYSTEMS
77.166

PHASE 1 REPORT. FEASIBILITY AND PRE-DESIGN STUDY. A STATEWIDE GEOGRAPHIC-BASED LAND USE INFORMATION SYSTEM
72.090

PHASE 1:MUSREAU PLANNING DISTRICT
73.029

PHENOLOGY AND SEASONALITY MODELING
74.022

PHENOLOGY, RESOURCE MANAGEMENT AND SYNAGRAPHIC COMPUTER MAPPING
71.047

PHENOMENON-BASED DATA-STRUCTURING AND DIGITAL TERRAIN MODELLING
79.135

PHOTOGRAMMETRIC ANALYTICAL TRIANGULATION IN CONNECTION WITH SATELLITE POSITIONING
82.237

PHOTOGRAMMETRIC ENGINEERING AND REMOTE SENSING
80.096

PHOTOGRAMMETRIC FLOOD RISK MAPPING
78.059

PHOTOGRAMMETRY AND DIGITAL ELEVATION MODELS, PRESENT STATUS OF DEVELOPMENT AND APPLICATION
81.173

PHOTOGRAMMETRY ASSISTS IN REAL ESTATE MAPPING & LEGAL DESCRIPTIONS
79.091

PHOTOGRAMMETRY SOFTWARE. A PACKAGE FOR EVERYONE
81.039

PHOTOGRAMMETRY: EQUIPMENT AND IMAGE PROCESSING.
82.142

PHOTOGRAMMETRY: EQUIPMENT AND IMAGE PROCESSING. 1975-DECEMBER, 1982 (CITATIONS FROM THE INTERNATIONAL INFORMATION SERVICE FOR THE PHYSICS AND ENGINEERING COMMUNITIES DATA BASE)
82.057

PHOTOGRAMMETRY: EQUIPMENT AND IMAGE PROCESSING. 1975-NOVEMBER, 1983 (CITATIONS FROM THE INTERNATIONAL INFORMATION SERVICE FOR THE PHYSICS AND ENGINEERING COMMUNITIES DATA BASE)
83.010

PHOTOGRAPHIC PRODUCTION OF DIGITIZED MAP INFORMATION
72.022

PHOTOMECHANICAL EXPERIMENTS IN AUTOMATED CARTOGRAPHY
71.032

PHYSICAL AND ECONOMIC DEVELOPMENT SUBSYSTEM (PEDS)
75.068

TITLE INDEX

PHYSICAL RESOURCE DATA NEEDS IN LAND USE PLANNING
74.103

PICASSO
82.293

PICDMS: A GENERAL PURPOSE GEOGRAPHIC MODELING SYSTEM
82.169

PICTORIAL INFORMATION PROCESSING OF LANDSAT DATA FOR GEOGRAPHIC ANALYSIS
81.170

PILLAR MAPPING PROGRAM: TWO COMMON TASKS OF THE THEMATIC CARTOGRAPHER
79.060

PILOT STUDY FOR CANADIAN FOREST RESOURCE DATA SYSTEM
78.016

PILOT STUDY OF THE DOMESTIC INFORMATION DISPLAY SYSTEM IN STATE AND LOCAL GOVERNMENT
82.129

PILOT STUDY. SPATIAL INFORMATION SYSTEM, DOT MAPS BY COMPUTER
71.057

PIXEL-PLANES: A VLSI-ORIENTED DESIGN FOR 3-D RASTER GRAPHICS
81.059

PLAN FOR THE DEVELOPMENT OF AN URBAN WILDLIFE HABITAT INVENTORY
77.159

PLANNING A LAND USE DATA BANK: A PILOT PROJECT
70.042

PLANNING AND ENGINEERING INTERFACE WITH A MODERNIZED LAND DATA SYSTEM. PROCEEDINGS OF THE SPECIALTY CONFERENCE, DENVER, CO., JUNE 2-4, 1980
80.074

PLANNING AND ENGINEERING REQUIREMENTS FOR A LAND DATA SYSTEM
80.047

A PLANNING AND INFORMATION SYSTEM FOR RECLAIMING LANDS DISTURBED BY COAL MINING IN ALBERTA
81.163

PLANNING APPLICATIONS IN EAST CENTRAL FLORIDA. PROGRESS REPORT. 1ST JUNE - 31ST JULY 73
73.063

PLANNING DATA BANK FOR SMALL CITIES: VICTORIA, B.C.
72.032

PLANNING DATA STUDY: SAULT STE. MARIE AREA PLANNING BOARD
75.016

PLANNING DATA SYSTEMS
72.028

PLANNING FOR A VERTICALLY INTEGRATED FOREST INDUSTRY
82.097

THE PLANNING IMPLICATIONS OF ATLANTA'S COMPUTER MAPPING SYSTEM
83.154

PLANNING THE USES AND MANAGEMENT OF LAND
79.158

PLANNING, DESIGN AND IMPLEMENTATION OF A COMPUTER-BASED LAND TITLES SYSTEM
71.079

PLOTALL: SOFTWARE DEVELOPMENT AND MARKETING IN A UNIVERSITY ENVIRONMENT
79.187

PLOTTERS. 1970-JULY, 1983 (CITATIONS FROM THE ENGINEERING INDEX DATA BASE)
83.082

PLOTTERS. 1972-JULY, 1983 (CITATIONS FROM THE INTERNATIONAL AEROSPACE ABSTRACTS DATA BASE)
83.083

PLOTTERS. 1976-JULY, 1983 (CITATIONS FROM THE ENERGY DATA BASE)
83.084

PLOTTING LAND USE IN OREGON
78.109

PLT: A MULTIPURPOSE PLOTTING PACKAGE
83.068

PLTSYM: A FORTRAN COMPUTER SYSTEM TO PLOT CANADIAN SYMBOL LOCATION MAPS FOR HYDROGEOCHEMICAL AND STREAM SEDIMENT RECONNAISSANCE DATA
82.055

PLUS SYSTEM: WHO NEEDS IT?
79.207

PLUS: A CONVERSATIONAL REGIONAL PLANNING TOOL
77.109

TITLE INDEX

POINT-IN POLYGON ALGORITHMS
71.028

POINT-IN-POLYGON ALGORITHIMS FOR GEOGRAPHIC INFORMATION SYSTEMS
82.253

POLK COUNTY, N.C., SLAYS PAPER GOLIATHS WITH MICROFILM DAVIDS
70.043

POLYGON FILLING ALGORITHMS
83.022

POLYGON OVERLAY SYSTEM
73.030

POLYPS-A POLYGON MAPPING PROGRAM
79.151

POLYVRT: A PROGRAM TO CONVERT GEOGRAPHIC BASE FILES
74.062

POPULATION AND LAND USE SYSTEM UPDATE (97)
73.041

PORTABLE FORTRAN CONTOUR-PLOTTING SUBPROGRAM
83.071

PORTABLE GEOGRAPHIC INFORMATION SYSTEMS FOR ON-SITE DATA ENVIRONMENTAL DATA COLLECTION
80.115

PORTFOLIO OF COMPUTER MAPPING SOFTWARE AT AKRON UNIVERSITY
80.106

PORTRAIT OF THE COMPUTER AS A YOUNG CITY PLANNER
72.009

POTENTIAL FOR LINKING ALL TYPES OF GEOGRAPHIC BASE FILES
72.029

PRACTICAL APPLICATIONS OF COMPUTERS IN GOVERNMENT
82.206 82.205 82.204 82.203 82.202 82.201
82.200 82.199 82.198 82.197 82.196 82.195
82.194 82.193 82.192 82.191 82.190 82.189
82.188 82.187 82.186

PRACTICAL GENERATION AND USE OF GEOGRAPHIC TRIANGULAR ELEMENT DATA STRUCTURES
77.107

PRACTICAL USE OF TREND-SURFACE ANALYSES IN THE GEOLOGICAL SCIENCES
75.266

A PRAGMATIC APPROACH TO GEOGRAPHIC INFORMATION SYSTEM DESIGN
82.326

PRAGMATIC USE OF THE DIME FILE
74.105

PRECISION TOPOGRAPHIC MAPPING THROUGH TROPICAL FORESTS BY VHF RADAR
83.056

THE PRELIMINARY DESIGN OF AN AUTOMATED CHINESE LAND ADMINISTRATIVE INFORMATION SYSTEM-CLAIS
81.063

PRELIMINARY REPORT FOR ALBERTA TREASURY: ALBERTA LAND REGISTRY STUDY
81.176

PRELIMINARY STUDIES TO IMPLEMENT A LEVELLING DATA BASE
81.062

PRELIMINARY USER'S NOTES ON INTERACTIVE DISPLAY SYSTEM FOR MANIPULATION OF CARTOGRAPHIC DATA
72.046

PREPARING PROPERTY IDENTIFICATION MAPS FOR LAND USE DATA SYSTEMS
77.146

PRESENT STATUS OF AUTOMATED CARTOGRAPHY
75.035

PRIMARY ENVIRONMENTAL INFORMATION - PART 5 DATA BASE FOR ENVIRONMENTALLY SENSITIVE AREAS
82.299

PRIME LAND, LAND EVALUATION AND LAND USE POLICY
81.111

PRINCE EDWARD ISLAND STORY
71.030

PRINCIPAL CONCEPTS FOR A LONG TERM MAPPING PROGRAMME IN THE MARITIME PROVINCES
78.166

PRINCIPLE OF CONSTRUCTION OF 'ASGPS-GEOGRAPHY', A SINGLE AUTOMATIC SYSTEM FOR GATHERING, PROCESSING AND STORING GEOGRAPHIC INFORMATION
77.210

PRINTERS (A BIBLIOGRAPHY WITH ABSTRACTS). REPORT FOR 1964-NOV. 79
79.037

TITLE INDEX

PRINTERS. 1964-MARCH, 1982 (CITATIONS FROM THE NTIS DATA BASE)
82.068

PRIORITIES FOR THE DEVELOPMENT OF A LAND INFORMATION INSTITUTE
76.115

PRISM-A PRISM PLOTTING PROGRAM
79.076

PROBLEMS AND ALTERNATIVES IN CONTROL NETWORK ADJUSTMENT
83.002

PROBLEMS IN MAPPING NON-PRODUCTIVE WOODLAND USING THE CLI PRESENT LAND USE CLASSIFICATION IN HALIFAX COUNTY, N.S.
81.195

PROBLEMS IN SPATIAL DATA ANALYSIS
82.111

PROBLEMS OF INTRODUCTING A POINT REFERENCED DATA SYSTEM IN AN URBAN AUTHORITY
72.096

PROCEDURE FOR PRODUCING A TERRAIN ELEVATION GRID FROM MAP CONTOUR DATA
79.061

PROCEDURES AND STANDARDS FOR A MULTIPURPOSE CADASTRE
83.218 83.033

PROCEDURES FOR ESTABLISHING COMMON STREET ADDRESS FORMATS FOR INFORMATION ASSEMBLY BY GEOGRAPHIC LOCATION
71.053

PROCEEDINGS OF A SEMINAR ON VARIABLE GRID RESOLUTION- ISSUES AND REQUIREMENTS, HELD ON 18-19 AUG., 1977 AT THE HYDROLOGIC ENGINEERING CENTER, DAVIS, CA.
77.127

PROCEEDINGS OF A WORKSHOP ON CURRENT ISSUES IN GEOGRAPHIC DATA PROCESSING
76.149

PROCEEDINGS OF CANADIAN SYMPOSIUM ON REMOTE SENSING
81.127

PROCEEDINGS OF LAND INFORMATION ON COMPUTER: A WORKSHOP. EDMONTON, ALTA., JUNE 2, 1976
76.003

PROCEEDINGS OF SEMINAR ON GEOGRAPHIC REFERENCING
81.116

PROCEEDINGS OF SEMINAR ON GEOGRAPHICAL REFERENCING
81.193

PROCEEDINGS OF SEMINAR ON GEOGRAPHICAL REFERENCING, TORONTO, ONT., SEPT. 27, 28, 1978
78.192

PROCEEDINGS OF THE COMMISSION ON GEOGRAPHICAL DATA SENSING AND PROCESSING, MOSCOW, U.S.S.R., 1976
77.222

PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON COMPUTER-ASSISTED CARTOGRAPHY
75.246

PROCEEDINGS OF THE LAND RECORDS SYMPOSIUM. UNIVERSITY OF MAINE. AUG. 25-27, 1976
76.188

PROCEEDINGS OF THE NORTH AMERICAN CONFERENCE ON MODERNIZATION OF LAND DATA SYSTEMS (A MULTI-PURPOSE APPROACH)
75.286

PROCEEDINGS OF THE SEMINAR ON DIGITAL TERRAIN MODELS, OCT. 5,6,7, 1979, UNIVERSITY OF GUELPH
80.105

PROCEEDINGS OF THE SYMPOSIUM ON CAPTURE, MANAGEMENT AND DISPLAY OF GEOLOGICAL DATA - WITH SPECIAL EMPHASIS ON ENERGY AND MINERAL RESOURCES.
76.085

PROCEEDINGS OF THE SYMPOSIUM ON GEOGRAPHIC INFORMATION PROCESSING. OTTAWA, ONT., JAN. 24, 1976
76.148

PROCEEDINGS OF THE WORKSHOP ON CADASTRE - BASED LAND INFORMATION SYSTEMS, FREDERICTON, N.B. JUNE 27-29, 1977
77.064

PROCEEDINGS, LAKE MICHIGAN INFORMATION SYMPOSIUM, OCT. 11-12, 1977
77.069

PROCESSING GEOGRAPHICAL MAP DATA IN RASTER MODE
82.216

TITLE INDEX

PRODUCT SPECIFICATIONS FOR DIGITAL LANDMASS SYSTEM (DLMS) DATA BASE
77.226

PRODUCTION AND PROCESSING OF GESTALT DIGITAL ELEVATION MODELS
80.098

PRODUCTION FACILITIES FOR DIGITAL ELEVATION DATA
78.054

PRODUCTION MAPPING WITH ORTHOPHOTO DIGITAL TERRAIN MODELS
78.186

PRODUCTION OF DIGITAL ELEVATION MODELS BY STEREOMODEL DIGITIZING
82.259

PROFESSIONAL IMPLICATIONS OF AUTOMATION PANEL
76.109

PROFILE: EAST SUSSEX. PROJECT TITLE: INTEGRATED DATA SYSTEM FOR THE PLANNING DEPARTMENT
72.118

PROFILE: MANCHESTER. PROJECT TITLE: MANAGEMENT INFORMATION SYSTEM: LAND AND PROPERTY
73.144

PROFILE:HERTFORDSHIRE
73.060

PROGRAM DESCRIPTION INTERSECT
75.247

PROGRAMME DEVELOPMENT FOR A COMPUTER-BASED LAND TITLES SYSTEM
71.010

PROGRAMME SPECIFICATIONS OF THE GEOGRAPHIC BASE MAINTENANCE MODULE
75.057

PROGRAMS OF THE HARVARD UNIVERSITY LABORATORY FOR COMPUTER GRAPHICS AND SPATIAL ANALYSIS
75.209

PROGRESS IN AUTOMATED CARTOGRAPHY
75.013

PROGRESS IN COMPUTER-ASSISTED CARTOGRAPHY WITHIN ACADEMIA
80.080

PROJECT FOR THE MODERNIZATION AND UPDATING OF MEXICO CITY'S LAND DATA BANK
79.058

PROJECT PROPOSAL FOR AN ASSESSMENT AND LAND TENURE SYSTEM
76.025

PROJECT REPORT: A LAND ORIENTED INFORMATION SYSTEM FOR NEW JERSEY. FISCAL YEAR 1973
73.072

THE PROJECTED CHARACTERISTICS OF A NATIONAL TOPOGRAPHIC DIGITAL DATA BANK
81.180

PROJECTS IN COMPUTER AIDED CLIMATOLOGY
81.078 81.008

PROPERTY IDENTIFIERS FOR THE MARITIME PROVINCES OF CANADA
73.031

PROPERTY IDENTIFIERS FOR THE MARTIME PROVINCES
71.011

A PROPERTY MAPPING SYSTEM FOR URBAN INFORMATION MANAGEMENT
81.177

PROPERTY TRANSACTIONS IN VICTORIA, 1967 TO 1972
74.129

PROPERTY VALUATION AND EQUALIZATION SYSTEM: A MODULE FROM THE WICHITA FALLS PROTOTYPE INTEGRATED MUNICIPAL INFORMATION SYSTEM
74.056

PROPOSAL FOR BASIC MAPPING. INTERNAL REPORT
74.093 74.089

PROPOSED GEOPLANNING DEMONSTRATION PROJECT, USING GEOGRAPHIC BASE FILE TECHNOLOGY
73.039

PROPOSED GUIDELINES FOR THE ASSIGNMENT OF PARCEL INDEX NUMBERS AND PARCEL LOCATOR NUMBERS
76.070

PROPOSED PARAMETERS FOR AN AUTOMATED MAPPING SATELLITE (MAPSAT) SYSTEM
78.040

PROPOSED WASHINGTON STATE LAND INFORMATION SERVICE
73.027

TITLE INDEX

PROSPECTING WITH MINICOMPUTER
75.287

PROTOTYPE FOR AUTOMATED REGIONAL LAND DATA SYSTEMS
79.163

A PROTOTYPE GEOGRAPHIC NAMES INPUT STATION FOR THE DEFENSE MAPPING AGENCY
82.128

THE PROTOTYPE LAND INFORMATION SYSTEM FOR THE CADASTRAL PILOT PROJECT IN COLOMBIA
83.170

PROTOTYPE PRODUCT SPECIFICATION TO SUPPORT HIGH RESOLUTION/ TERRAIN ANALYSIS APPLICATIONS
82.282

PROTOTYPE SPATIAL DATA MANAGEMENT SYSTEM
80.051

PROVINCE OF ONTARIO LAND REGISTRATION INFORMATION SYSTEM (POLARIS)
78.105

PROVINCIAL COORDINATE SYSTEM AS IT APPLIES TO THE OIL INDUSTRY
75.229

PROVINCIAL GOVERNMENT PERSFECTIVE ON INTERGOVERNMENTAL ROLES IN HARDWARE/SOFTWARE DEVELOPMENT
77.096

PUBLIC COSTS OF LAND RECORDS
73.142

PYRAMIDAL PARAMETRICS
83.054

QUALITY OF RESIDENTIAL GEOGRAPHIC CODING
73.129

QUANTITATIVE COMPARISON OF AUTOMATIC CONTOURING ALGORITHMS
72.111

RADIAL SWEEP ALGORITHM FOR CONSTRUCTING TRIANGULATED IRREGULAR NETWORKS
82.079

RAFLEXIVE PREDICTION AND DIGITAL TERRAIN MODELLING
78.098

RAILWAY ROUTE SELECTION - LIMITED EXERCISE IN DATA BANKING AND RETRIEVAL
78.006

RAMP: A COMPUTER SYSTEM FOR MAPPING REGIONAL AREAS
75.172

RAPID RECORDING PROCESS
73.106

RASTER DATA ACQUISITION AND PROCESSING
82.184

RASTER DATA DEVELOPMENT IN THE NATIONAL MAPPING DIVISION U.S. GEOLOGICAL SURVEY
81.133

RASTER DATA HANDLING IN GEOGRAPHIC INFORMATION SYSTEMS
77.186

RASTER DATA STRUCTURES AND TOPOGRAPHIC DATA
82.271

A RASTER ENCODED POLYGON DATA STRUCTURE FOR LAND RESOURCE ANALYSIS APPLICATIONS
82.180

RASTER SCANNED CHARACTER RECOGNITION (RSCR)
81.014

RASTER SCANNING FOR OPERATIONAL DIGITIZING OF GRAPHICAL DATA.
82.083

RASTER-BASED APPROACHES TO MANIPULATION OF CARTOGRAPHIC DATA
79.134

RASTER-MODE ALGORITHM FOR INTERACTIVE MODIFICATION OF LINE DRAWING DATA
79.170

RASTER-VECTOR CONVERSION METHODS FOR AUTOMATED CARTOGRAPHY WITH APPLICATIONS IN POLYGON MAPS & FEATURE ANALYSIS
82.175

RATIONAL LAND USE DECISION-MAKING: THE NATCHEZ STATE PARK
79.148

READJUSTMENT OF THE AUSTRALIAN PRIMARY GEODETIC NETWORK USING A COMBINATION OF TERRESTRIAL AND SATELLITE DOPPLER OBSERVATIONS
81.068

TITLE INDEX

REAL ESTATE ASSESSMENT AND LAND RECORDS SYSTEM
76.110

REAL PROPERTY SYSTEM IN CRISIS
76.040

REAL PROPERTY VALUATION SYSTEMS
76.141

REAL-ESTATE INTERESTS OF A WISCONSIN UTILITY
79.193

RECENT ADVANCEMENTS TO & APPLICATIONS OF A LAND EVALUATION MODEL: A DECISION SUPPORT SYSTEM FOR LAND USE POLICY ANALYSIS & DECISION-MAKERS
83.159

RECENT ADVANCES IN AUTOMATIC CARTOGRAPHY
70.005

RECENT EXPERIENCE WITH CONTOURING FROM ORTHOPHOTO DIGITAL TERRAIN MODELS
76.078

RECENT TRENDS IN GEOGRAPHIC INFORMATION PROCESSING IN THE NATIONAL CAPITAL REGION
78.183 78.155 78.152 78.129 78.108 78.048 78.043 78.008

RECORDER AND LAND RECORDS
73.009

RECORDING AND SCANNING ADVANCES IN CARTOGRAPHIC EBR SYSTEMS
81.041

RECORDING LAND TRANSFERS
76.084

RECORDINGS ACTS TODAY AND YESTERDAY
76.170

RECORDKEEPING IN FORSYTH COUNTY, N.C. - PAST, PRESENT, FUTURE
71.005

RECORDS OF TITLE TO LAND: A PLEA FOR REFORM
71.062

REGIONAL ENVIRONMENTAL STUDIES: APPLICATION OF GEOECOLOGY DATA BASE
79.162

REGIONAL ENVIRONMENTAL SYSTEMS ANALYSIS PROGRAM PROGRESS REPORT. JUNE 1973-JUNE 1974
74.037

REGIONAL ENVIRONMENTAL SYSTEMS: ASSESSMENT OF RANN PROJECTS. PROCEEDINGS OF WORKSHOP HELD JUNE 20-24, 1977 AT THE UNIVERSITY OF WASHINGTON
78.167

REGIONAL INFORMATION SYSTEM - BATHURST-ORANGE
77.089

REGIONAL INFORMATION SYSTEM FOR THE BATHURST-ORANGE GROWTH AREA
77.151

REGIONAL INFORMATION SYSTEM: A CONCEPTUAL DESIGN
75.224

REGIONAL INFORMATION SYSTEM: FEASIBILITY REPORT
73.088

REGIONAL INFORMATION SYSTEM: STATISTICAL REPORT 1979 AND 1980
81.118

REGIONAL LAND USE CLASSIFICATION DERIVED FROM COMPUTER PROCESSED SATELLITE DATA
76.100

REGIONAL PLANNING INFORMATION NEEDS ANALYSIS: REPORT ON FINDINGS AND RECOMMENDATIONS
75.196

REGIONAL PLANNING SYSTEM STUDY: DEMANDS UPON THE SYSTEM
81.117

REGIONAL RESOURCE INFORMATION SYSTEMS
79.142

REGIONAL STATISTICAL DATA BASE
77.116

REGISTRATION AND STORING OF COORDINATES
70.044

REGISTRATION OF DIGITIZED AERIAL PHOTOGRAPHY WITH A DIGITAL MAP DATA BASE
82.065

REGRID: A GENERALIZED GRID-TO-GRID TRANSFORMATION PROCEDURE
76.099

RELATION OF LAND USE/LAND COVER TO RESOURCE DEMANDS
81.080

TITLE INDEX

RELATIONSHIP BETWEEN A PARCEL LEVEL DATA FILE AND A STREET SEGMENT GEOGRAPHIC BASE FILE
73.136

RELEVANT DATA STRUCTURES
77.022

RELIEF REPRESENTATION IN AUTOMATED CARTOGRAPHY: AN ALGORITHMIC APPROACH
75.226

REMOTE IMAGE PROCESSING (RIPS) SPECIFICATIONS
82.274

REMOTE SENSING ANALYSIS OF FLOODING AND SALINITY PROBLEMS IN THE NW AREA OF BUENOS AIRES PROVINCE, ARGENTINA
82.048

REMOTE SENSING AND CANADA GEOGRAPHIC INFORMATION SYSTEM (CGIS) FOR IMPACT STUDIES
75.097 75.096

REMOTE SENSING AND CARTOGRAPHY
82.215

REMOTE SENSING AND DIGITAL MAPPING: SUBMISSION BY THE ROYAL SOCIETY TO THE HOUSE OF LORDS SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY
83.011

REMOTE SENSING AND GEOGRAPHICALLY BASED INFORMATION SYSTEMS
77.050

REMOTE SENSING AND URBAN INFORMATION SYSTEMS
73.138

REMOTE SENSING APPLICATION FOR URBAN PLANNING
75.178

REMOTE SENSING APPLICATIONS IN FORESTRY - THE DEVELOPMENT OF AN EARTH RESOURCES INFORMATION SYSTEM USING AERIAL PHOTOGRAPHS AND DIGITAL COMPUTERS. ANNUAL PROGRESS REPORT
70.031

REMOTE SENSING FOR LAND MANAGEMENT AND PLANNING
83.053

REMOTE SENSING FOR RESOURCE MANAGEMENT
82.280

REMOTE SENSING INPUT TO INFORMATION SYSTEMS
72.095

REMOTE SENSING OF AGRICULTURAL RESOURCES.
82.146

REMOTE SENSING OF AGRICULTURAL RESOURCES. OCTOBER 1973 - JANUARY 1983 (CITATIONS FROM THE NTIS DATA BASE)
83.049

REMOTE SENSING OF AGRICULTURE, EARTH RESOURCES AND MAN'S ENVIRONMENT
76.093

REMOTE SENSING REMOTEC APPLICATIONS. THE USE OF IMPULSE RADAR TECHNIQUES FOR DEPTH PROFILING OF PEAT DEPOSITS
82.152

REMOTE SENSING: AN INPUT TO GEOGRAPHIC INFORMATION SYSTEMS IN THE 1980S
82.156 81.186 81.185 81.184 81.182

REMOTING SENSING INPUTS TO A 19TH CENTURY LAND MARKET MODEL
80.078

REPLICATION OF NATURAL TOPOGRAPHIC FEATURES
78.056

REPORT BY GEOCODING COMMITTEE: PROPOSED GEOCODING STANDARDS FOR PURPOSES OF INFORMATION INTER-CHANGE
73.121

REPORT OF A VISIT TO SURVEYS AND MAPPING ORGANIZATIONS IN THE UNITED KINGDOM, FRANCE, FEDERAL REPUBLIC OF GERMANY, FINLAND AND SWEDEN MADE IN FEB., 1975
75.102

REPORT OF MAPPING REQUIREMENTS TASK FORCE 1978
78.022

REPORT OF THE CONTINUING WORKING GROUP ON SOFTWARE PORTABILITY
81.005

REPORT OF THE ORDANCE SURVEY REVIEW COMMITTEE
79.069

REPORT OF THE TASK FORCE ON NATIONAL SURVEYING AND MAPPING
78.154

TITLE INDEX

REPORT ON CURRENT AND FUTURE DEVELOPMENT IN AN AUTOMATED CARTOGRAPHIC SYSTEM
73.095

REPORT ON DMA'S PROTOTYPE GRAPHICS FROM ENHANCED LANDSAT IMAGERY FOR APPLICATIONS TO HYDROGRAPHIC CHARTING
83.050

REPORT ON LAND REGISTRATION
71.058

REPORT ON LAND REGISTRATION AND INFORMATION SERVICE, MARITIME PROVINCES, CANADA
79.178

REPORT ON LAND REGISTRATION. APPENDIX 2
71.044

REPORT ON THE CURRENT SITUATION OF THE SWEDISH LAND DATABANK PROJECT
73.132

REPORT ON THE DEVELOPMENT OF NEW SYSTEMS AND PROCEDURES. LAND TITLES OFFICE - TORONTO. INTERNAL REPORT
73.103

REPORT ON THE LAND INFORMATION SYSTEMS AND NEEDS OF THE BRITISH COLUMBIA GOVERNMENT
78.179

A REPORT ON THE LAND STATUS AUTOMATED SYSTEM PROJECT
82.264

REPRESENTATION OF CONTOURS AND REGIONS FOR EFFICIENT COMPUTER SEARCH
73.093

REPRESENTATION OF GEOGRAPHIC SURFACES WITHIN A COMPUTER
75.186

REPRESENTATION OF GEOLOGICAL AND SOIL INFORMATION WITHIN AN AUTOMATED DATA HANDLING SYSTEM
74.013

REPRESENTING TOPOLOGIC PROPERTIES IN RASTER DATA STURCTURES
82.232

REQUIREMENTS AND CONSTRAINTS ON THE DESIGN OF THE URBAN INFORMATION SYSTEM
70.015

THE REQUIREMENTS AND SIGNIFICANCE OF LAND REGISTRATION AND A CADASTRE IN DEVELOPING COUNTRIES
82.208

REQUIREMENTS FOR A STATEWIDE GEOGRAPHIC INFORMATION SYSTEM: A SURVEY OF AGENCY DATA AND ANALYTICAL NEEDS
80.012

REQUIREMENTS OF A LAND DATA MANAGEMENT SYSTEM
76.181

REQUIREMENTS OF THE DATA TO BE USED FOR RESOURCE ANALYSIS
77.187

RESEARCH AND DEVELOPMENT IN TOPOGRAHIC MAPPING. ANNUAL REPORT
73.130

RESEARCH AND DEVELOPMENT IN TOPOGRAPHIC MAPPING
74.126

RESEARCH AND DEVELOPMENT IN TOPOGRAPHIC MAPPING. (OPEN-FILE REPORT)
75.252

RESEARCH AND DEVELOPMENT IN TOPOGRAPHIC MAPPING. ANNUAL REPORT
72.109

RESEARCH GOALS IN MATHEMATICAL PATTERN RECOGNITION
80.081

RESEARCH INTO AN INTERACTIVE SPATIAL INFORMATION SYSTEM
82.290

RESEARCH PROGRAM IN COMPUTER TECHNOLOGY
83.092

RESERVOIR AREAS AND CAPACITIES FROM DIGITAL ELEVATION MODELS
80.026

RESIDENTIAL ENERGY USE: COMBINING DISAGGREGATED DATA SOURCES FOR POLICY ANALYSIS
77.175

RESOURCE AND ENVIRONMENTAL DATA ANALYSES
74.079

RESOURCE DATA BASES - RESOURCE ASSESSMENTS
76.047

TITLE INDEX

RESOURCE DATA MANAGEMENT SYSTEM, GRASP: (GEOGRAPHICAL RESOURCE ANALYSIS SOFTWARE PACKAGE) APPLICATION TO THE LAKE SUPERIOR SHORELANDS
77.162

RESOURCE DATA MANAGEMENT SYSTEM, GRASP: DESCRIPTION OF A LAND RESOURCE DATA BASE
77.035

RESOURCE INFORMATION SYSTEM DEVELOPED BY USER APPLICATIONS
78.134

RESTRUCTURING DIGITAL MAP DATA FOR USE IN DATABASES WITH SPATIAL CHARACTERISTICS
[illegible].49

RESULTS OF PHASE 1 OF LAND USE INFORMATION DELPHI STUDY
75.179

RETHINKING DIDS: THE NEXT GENERATION OF INTERACTIVE COLOR MAPPING SYSTEMS
83.165

REVIEW OF CARTOGRAPHIC AUTOMATION
74.010

REVIEW OF COMPUTER-BASED RESOURCE INFORMATION SYSTEMS
74.123 74.036

A REVIEW OF ENVIRONMENTAL DATA HANDLING SYSTEMS
81.164

REVIEW OF INTERPOLATION METHODS FOR DIGITAL TERRAIN MODELS
76.128 76.127

REVIEW OF PRINCIPAL LAND DATA SYSTEMS
75.210

REVIEW OF PRIORITIES
76.051

REVIEW OF SELECTED CENSUS DIGITAL CARTOGRAPHIC FILES AVAILABLE FROM THE U.S. BUREAU OF THE CENSUS
79.200

REVIEW OF SYSTEMS AND PROCEDURES: LAND TITLES
78.153

REVIEW OF THE CARTOGRAPHIC FILE OF THE CANADA SOIL INFORMATION SYSTEM (CANSIS)
75.038

REVIEW OF THE NEW YORK STATE LAND USE AND NATURAL RESOURCES INVENTORY
70.017

REVIEW: 15 YEARS OF URISA GEOPROCESSING
77.139

REVITALIZATION IN WASHINGTON, D.C.: AN ANALYSIS OF CHANGE FROM 1970-1978
81.075

RISE AND FALL OF THE MASTER PARCEL FILE
72.008

RMLR - A SYSTEM FOR THE DELAWARE VALLEY
77.185

RMLR: WHAT IT MEANS TO THE CIVIL ENGINEER
80.086

ROCKY ROAD TO 1980: A SCENARIO OF THE FUTURE OF AUTOMATED GEOCODING TECHNOLOGY OF 1980
71.006

ROLE AND ADVISABILITY OF ADDRESS AND POPULATION REGISTERS: THE AMERICAN EXPERIENCE
76.090

ROLE AND ADVISABILITY OF ADDRESS AND POPULATION REGISTERS: THE CANADIAN EXPERIENCE - STATISTICS CANADA
76.024

ROLE OF A CADASTRE IN STATISTICAL INFORMATION SYSTEMS
75.191 74.095 74.092

ROLE OF A GEOGRAPHIC INFORMATION SYSTEM IN THE MANAGEMENT OF NATIONAL PARKS IN THE ATLANTIC REGION
83.179

THE ROLE OF CHANGE DATA IN A LAND USE AND LAND COVER MAP UPDATING PROGRAM
81.184

ROLE OF COMPUTER INFORMATION SYSTEMS IN SOIL SCIENCE
77.145

THE ROLE OF DIGITAL CARTOGRAPHIC DATA IN THE GEOSCIENCES
82.095

ROLE OF OPERATIONS FUNCTION IN THE EVALUATION OF INFORMATION TECHNOLOGY AT THE LOCAL LEVEL - MANAGEMENT FUNCTION PERSPECTIVE: USING INTEGRATION TO MANAGE DIVERSE FILES
76.134

ROLE OF PLANNING AS SEEN BY THE OPERATIONS FUNCTION
76.146

THE ROLE OF QUALITY INFORMATION IN THE LONG-TERM FUNCTIONING OF A GEOGRAPHIC INFORMATION SYSTEM
83.185

ROLE OF THE GPM-111 INTERACTIVE MAPPING SYSTEM IN THE DIGITAL TOPOGRAPHIC MAPPING PROGRAM
78.003

ROLE OF THE LEGISTLATURE IN THE MODERNIZATION OF NORTH CAROLINA'S LAND RECORDS INFORMATION SYSTEMS
79.057

ROLES OF REMOTE SENSING APPLICATIONS AND GEOGRAPHIC INFORMATION SYSTEMS IN NATIONAL DEVELOPMENT 1976-80
77.223

ROUTE AND SITE SELECTION SYSTEM
78.091

THE ROV GEOGRAPHIC REFERENCE SYSTEM
82.196

RUN WILD II: A STORAGE AND RETRIEVAL SYSTEM FOR WILDLIFE DATA
79.166

RURAL AND SINGLE PROPERTY GEOCODING
70.048

RURAL LAND USE CHANGES IN THE OTTAWA-HULL URBAN REGION
76.075

SAMPLING OF PLANAR SURFACES
75.233

SANITARY SEWER GEOGRAPHIC BASE FILE
78.127

SANTA ANA RIVER BASIN: AN EXAMPLE OF THE USE OF COMPUTER GRAPHICS IN THE REGIONAL PLAN EVALUATION. FINAL REPORT
75.228

SANTA MONICA MOUNTAINS OF LOS ANGELES RESEARCH BIBLIOGRAPHY
74.005

SATELLITE REMOTE SENSING IN SURVEYING - ITS POTENTIAL FOR DIGITAL TERRAIN MODELLING
82.217

SCANIT: CENTRALIZED DIGITIZING OF FOREST RESOURCE MAPS OR PHOTOGRAPHS
81.037

SCIENCE AND GEOGRAPHIC INFORMATION SYSTEM (GIS) TECHNOLOGY
83.161

SCOTTISH RURAL LAND USE INFORMATION SYSTEM PROJECT
82.170

SCRIS EXPERIENCE WITH MERGING CENSUS DATA AND LOCAL DATA
72.042

SECOND SYMPOSIUM ON GEOGRAPHICAL INFORMATION SYSTEMS: A SYNOPSIS
73.099

SEDIMENT BUDGETS AND ROUTING IN FORESTED DRAINAGE BASINS
82.072

SEEDIS PROJECT: A SUMMARY OVERVIEW
81.087

SEEING THE SITE IN DENVER, COLORADO
74.109

SELECTED GEOLOGICAL FIELD DATA SYSTEMS IN CANADA: A BRIEF DESCRIPTION OF THEIR CAPABILITIES AND OBJECTIVES
75.202

SELECTING DIGITAL MAPPING EQUIPMENT FOR LRIS
83.175

SELECTION OF AN INTERACTIVE SYSTEM FOR THE LRIS CADASTRE
79.137

SELECTIVE GEOLOGIC MAP INFORMATION
76.074

A SEMANTIC VIEW ON GEOMETRIC REPRESENTATION OF URBAN LAND INFORMATION
82.287

SEMANTICS OF AN INTERACTIVE EDITOR
77.047

SEMI-AUTOMATED LARGE SCALE MAPPING. INTERNAL REPORT
71.049

SEMI-AUTOMATED PRODUCTION SYSTEM FOR ENGINEERING PLANS: ADAPTABILITY TO CARTOGRAPHY
73.085

SEMI-AUTOMATIC MAP DIGITIZING SYSTEM
74.113

TITLE INDEX

SEMIAUTOMATED PHOTOGRAMMETRY IN SUPPORT OF FALCON
74.027

SEMINAR ON GEOCODING
70.013

THE SENSOR IMAGE SIMULATOR
81.099

SENSOR IMAGE SIMULATOR APPLICATION STUDIES
82.067

SEP IMAGE ANALYSIS SYSTEM
81.181

SHADED RELIEF IMAGES FOR CARTOGRAPHIC APPLICATIONS
81.040

SHAREABLE DATA BASES KEY FOR EFFECTIVE MAPMAKING
78.137

THE SHL-RAMS SYSTEM FOR NATURAL RESOURCE MANAGEMENT
82.179

SIDE LOOKING RADAR 1970-NOVEMBER, 1982 (CITATIONS FROM THE NTIS DATA BASE)
82.027

SIDE LOOKING RADAR. 1970-AUGUST, 1983 (CITATIONS FROM THE NTIS DATA BASE)
83.040

SIFT: SWIC IMPLEMENTATION OF FRONT-END TOOLS
83.095

SIGMI SYSTEM OF THE NATIONAL SCHOOL OF MINES OF PARIS
75.137

SITE CHARACTERIZATION INFORMATION USING LANDSAT SATELLITE AND OTHER REMOTE SENSING DATA - INTEGRATION OF REMOTE SENSING DATA WITH GIS. A CASE STUDY IN PENNSYLVANIA
83.080

SLIMS - A MICROCOMPUTER-BASED INFORMATION MANAGEMENT SYSTEM FOR A PARTICULAR CROSS REGIONAL COMPARISON APPLICATION
83.144

SLOPE MAPPING
78.047

SMALL AREA MAPPING SYSTEM (SAM)
83.102

SMALL AUTOMATED CARTOGRAPHIC SYSTEMS
75.036

SMALL OPERATIONAL SYSTEM
79.024

SNOHOMISH COUNTY LAND USE INVENTORY AND DEVELOPMENT MONITORING SYSTEM
75.070

SO YOU NEED A GEOGRAPHIC INFORMATION SYSTEM?
77.153

SOCIAL AND ADMINISTRATIVE FUNCTIONS OF A CADASTRE: ENVIRONMENTAL STUDIES, PLANNING AND ADMINISTRATION
75.141

SOFT COPY DISPLAYS
79.025

SOFTWARE FOR THREE DIMENSIONAL TOPOGRAPHIC SCENES
82.174

SOFTWARE FOR TRANSFORMATION AND MAP DRAWING OF NUMERICAL INFORMATIONS OF LAND
82.010

SOFTWARE TOOLS FOR MICROPROGRAMMED GRAPHICS PROCESSOR DESIGN
83.133

SOIL CONSERVATION SERVICE'S INTEREST IN GEOGRAPHIC INFORMATION SYSTEMS
81.052

THE SOIL CONSERVATION SERVICE'S INTEREST IN GEOGRAPHIC INFORMATION SYSTEMS
82.096

SOIL LOSS ANALYSIS WITH THE KENTUCKY NATURAL RESOURCES INFORMATION SYSTEM
83.160

SOIL LOSS PREDICTION IN A GEOGRAPHIC INFORMATION SYSTEM FORMAT
82.106

SOIL MAPPING BY COMPUTER
75.288

SOIL/LAND INVENTORY IN ALBERTA
83.219

SOME ASPECTS OF CREATION AND FUNCTIONING OF AUTOMATED GEOGRAPHIC INFORMATION SYSTEMS
77.231

TITLE INDEX

SOME ASPECTS OF THE DEVELOPMENT OF A SYSTEM FOR AUTOMATIC COMPILATION OF GEOLOGICAL MAPS
76.183

SOME AUTOMATED CARTOGRAPHY DEVELOPMENTS AT THE DEFENSE MAPPING AGENCY
81.038

SOME CONSIDERATIONS IN MANAGEMENT OF COMPUTER - PROCESSABLE FILES OF GEOLOGICAL DATA
74.116

SOME NEW MAP DATA ENCODING SCHEMES
78.064

SOME PROBLEMS ASSOCIATED WITH THE USE OF COLOR IN CARTOGRAPHIC DISPLAYS
82.089

SOME SUGGESTIONS FOR IMPROVING THE COST STRUCTURE OF INTEGRATED SURVEY SYSTEMS
82.002

SOME TECHNICAL FEATURES OF MULTI-PURPOSE LAND DATA SYSTEM
75.262

SOME THOUGHTS ON LAND TITLE RECORDS AND COMPUTERIZATION
73.134

SOME USES OF A DIGITAL TOPOGRAPHIC DATA BASE
76.010

SOUND AND COMPUTER INFORMATION PRESENTATION
82.123

SOURCES OF DEM
80.027

SOUTH CAROLINA LAND USE INFORMATION SYSTEM: AN OVERVIEW
72.050

SOUTH DAKOTA AUTOMATED GEOGRAPHIC INFORMATION SYSTEM
78.136

SPACE EFFICIENCY OF QUAD TREES
82.245

THE SPACE EFFICIENCY OF QUADTREES
82.285

SPACE-AGE LAND RESOURCE MAPPING
82.148

A SPAN-LINE APPROACH TO THE POLYGON INTERSECTION PROBLEM
82.004

SPATIAL ANALYSIS
71.027

SPATIAL AND DEMOGRAPHIC DATA: A UNIFIED MEANS FOR PREDICTING URBAN SERVICE SYSTEM PERFORMANCE
80.024

SPATIAL CONTROL: A NECESSARY BASE FOR A MODERN LAND INFORMATION SYSTEM
80.008

SPATIAL DATA ANALYSIS AND INFORMATION COMMUNICATION
79.158

SPATIAL DATA ANALYSIS TECHNIQUES
72.086

SPATIAL DATA CHARACTERISTICS AND HANDLING TECHNIQUES
75.242

SPATIAL DATA FILE STRUCTURE CONSIDERATIONS
72.081

SPATIAL DATA INFORMATION SYSTEMS: A CHRONOLOGY
75.075

SPATIAL DATA MANAGEMENT SYSTEM. QUARTERLY RESEARCH AND DEVELOPMENT TECHNICAL REPORT 1 DEC 78-28 FEB. 79
79.099

SPATIAL DATA MANIPULATION TECHNIQUES
72.087

SPATIAL DATA MASSAGING TECHNIQUES
72.059

SPATIAL DATA PROCESSING PROJECT
72.031

SPATIAL DATA, GEOGRAPHIC REFERENCING (GRS), AND COMPUTER ASSISTED MAPPING (CAM), AT THE CITY OF CALGARY
82.194

SPATIAL INFORMATION MANAGEMENT - A SURVEY
82.100

SPATIAL INFORMATION SYSTEM, A PILOT STUDY - INTRODUCTION
70.001

TITLE INDEX

SPATIAL INFORMATION SYSTEM: AN INTRODUCTION
75.131

SPATIAL INFORMATION SYSTEMS. INSTANT MAPS FOR ANALYZING NATURAL RESOURCES DATA
81.066

SPATIAL INFORMATION SYSTEMS: AN INTRODUCTION
77.137

SPATIAL QUANTIFICATION OF MAPS OR IMAGES: CELL SIZE OR PIXEL SIZE IMPLICATIONS
79.211

SPATIAL SYSTEMS AND AUTOMATED GEOCARTOGRAPHIC ANALYSIS
78.044

SPATIAL THEORY AND INFORMATION SYSTEMS
70.003

SPEAKEASY PROGRAMS
79.012

THE SPEC-DAT INTERACTIVE DIGITAL IMAGE PROCESSING SYSTEM SOFTWARE DESCRIPTION
82.275

SPECIAL REPORT: COMPUTER GRAPHICS. PRODUCT PROFILE. INTERACTIVE COMPUTER GRAPHICS SYSTEMS
79.164

SPECIAL SECTION: LAND RECORDS
71.082

SPECTRAL ANALYSIS OF SOME INTERPOLATION METHODS
78.099

ST. LOUIS LRMS - A CITY-WIDE ON-LINE DBMS WHICH FINANCED ITSELF
83.151

STANDARD FORMAT FOR THE TRANSFER OF GEOCODED INFORMATION IN SPATIAL DATA POLYGON FILES
79.032

STANDARD GEOGRAPHICAL CLASSIFICATION SYSTEM
78.079

STANDARD SPATIAL REFERENCING TECHNIQUES FOR RURAL GEOCODING
76.167

STANDARDIZATION AND COMPUTERIZATION OF SYMBOLOGY FOR ENGINEERING SCALE MAPS
79.109

STANDARDIZATION OF BASE MAPPING: BRIEF TO THE INTERDEPARTMENT COMMITTEE ON SURVEYING AND MAPPING, PROVINCE OF ALBERTA.
80.002

STANDARDIZATION OF MAP SYMBOLOGY
82.034

STANDARDS FOR CADASTRAL SURVEY CONTROL IN THE SPACE AGE
83.141

STANDARDS FOR THE CLASSIFICATION OF TOPOGRAPHIC FEATURES
82.307

STANDARDS FOR THE QUALITY EVALUATION OF DIGITAL TOPOGRAPHIC DATA
82.308

STATE AND UTILITY OF COMPUTER-ASSISTED MAP AND CHART PRODUCTION
81.122

STATE LAND USE PLANNING PROCESS ISSUES: GEOGRAPHIC INFORMATION SYSTEM IMPLICATIONS
75.076

STATE NATURAL RESOURCES PROGRAMS - THE TEXAS EXPERIENCE
81.156

THE STATE OF DEVELOPMENT OF SYSTEMS FOR HANDLING NATURAL RESOURCES INVENTORY DATA
81.162

STATE OF LAND DATA SYSTEMS TECHNOLOGY
79.215 78.173

STATE PLAN FOR LAKE COUNTY
75.142

STATE RESOURCE MANAGEMENT PROGRAMS - PRIMER, CRITICAL AREA AND INFORMATION DATA HANDLING
75.149

STATE-OF-THE-ART RESEARCH BIBLIOGRAPHY ON MAPPING AND SURVEYING
79.017

A STATE-WIDE LANDSAT DATA BASE AS A SOURCE OF LAND RESOURCE INFORMATION FOR PENNSYLVANIA
82.220

TITLE INDEX

STATEWIDE LAND INFORMATION SYSTEMS: DESIGN CONSIDERATIONS
72.039

STATEWIDE LAND USE ANALYSIS AND INFORMATION REQUIREMENTS
73.054

STATEWIDE LANDSAT INVENTORY OF CALIFORNIA FORESTS
81.102

STATEWIDE REGIONAL INFORMATION SYSTEMS NETWORK
72.098

STATION AREA LAND USE. BART IMPACT PROGRAM. LAND USE AND URBAN DEVELOPMENT PROJECT
77.085

STATISTICAL ACCURACY AND MAP ENHANCEMENT IN CHOROPLETHIC MAPPING
75.167

STATISTICAL CHARACTERIZATION OF ALTITUDE MATRICES BY COMPUTER. REPORT 6. AN INTEGRATED SYSTEM OF TERRAIN ANALYSIS AND SLOPE MAPPING. FINAL REPORT 8 JUNE 73 - 4 SEPT 79
79.071

STATISTICAL MAPPING WITH A STATISTICAL PACKAGE
80.077

A STATISTICAL METHOD FOR THE DETERMINATION OF THE DENSITY OF OBJECTS ON MAPS
82.001

STATUS AND FUTURE OF GEOCODING IN CALGARY, PRELIMINARY REPORT. PROJECT 4-4
77.005

STATUS AND PURPOSE OF RESEARCH ON THE ECONOMICS OF IMPROVED LAND DATA SYSTEMS
70.035

STATUS OF AUTO CARTO AT THE DEFENSE MAPPING AGENCY
83.020

STATUS OF COMPUTERIZED FILES IN THE MINERAL DATA BANK
74.134

STATUS OF URBAN DATA SYSTEMS IN GERMANY
73.064

STATUS OF URBAN INFORMATION SYSTEMS IN FRANCE
73.116

STONEWALLED: BARRIERS TO ADOPTION OF COMPUTER ORIENTED LAND USE INFORMATION SYSTEMS
75.245

STORAGE AND RETRIEVAL OF COUNTY-LEVEL TREE SPECIES JOINT OCCURRENCE MATRICES FROM CONTINUOUS FOREST INVENTORY DATA
77.136

STORAGE AND RETRIEVAL OF GEOGRAPHIC DATA
73.045

STORAGE AND RETRIEVAL OF GEOLOGIC DATA OF MINERAL DEPOSITS ON CAPE BRETON, N.S.
75.281

STORET (STORAGE AND RETRIEVAL OF WATER RESOURCES INFORMATION)
78.168

STORING AND PROCESSING DATA FOR SOIL AND LAND USE CAPABILITY SURVEYS
75.206

STORING AND RETRIEVING LOCATIONAL DATA
78.028

STRABO - AN ALTERNATE GIS APPROACH TO DECISION-MAKING FOR PLANNING APPLICATIONS IN DATA SCARCE ENVIRONMENTS
83.183

STRAIGHT EDGE ENHANCEMENT AND MAPPING
79.167

STRATEGIC PLAN FOR INFORMATION SYSTEMS-DRAFT REPORT
75.250

STRUCTURED DEVELOPMENT OF A PARCEL BASED ON MASTER PROPERTY FILE FOR PLANNING AND POLICY ANALYSIS
77.158

STRUCTURING A GBF TO MEET POLICE AND FIRE USERS NEEDS
78.114

STUDIES OF OFFSHORE PETROLEUM LEASES USING A CARTOGRAPHIC DATA BASE SYSTEM
79.189

TITLE INDEX

STUDY OF APPLICATION OF REMOTE SENSING DATA TO LAND USE PLANNING ON THE MISSISSIPPI GULF COAST. INTERIM REPORT SEPT. 72 JAN. 73
73.075

THE STUDY OF DIGITAL CARTOGRAPHIC DATA FEATURES IN PREPARATION FOR A NATIONAL STANDARD
83.197

STUDY ON SPECTRAL/RADIOMETRIC CHARACTERISTICS OF THE THEMATIC MAPPER FOR LAND USE APPLICATIONS
83.015

SUB-AREA RETRIEVAL SYSTEM (SARS) USED ON THE COAST MOUNTAINS PROJECT OF THE GEOLOGICAL SURVEY OF CANADA
75.123

SUCCESSFUL APPLICATIONS OF A GEO-BASED INFORMATION SYSTEM
78.041

SUGGESTIONS ON THE FUNCTIONAL REQUIREMENTS FOR AN ENVIRONMENTAL DATA BASE
79.123

A SUITE OF FORTRAN PROGRAMS FOR CLASSIFYING INDIVIDUAL CENSUS DATA OR OTHER VERY LARGE DATA SETS WITH NOMINAL MEASUREMENT SCALES
81.027

SUMMARY DESCRIPTION OF THE MARYLAND AUTOMATED GEOGRAPHIC INFORMATION (MAGI) SYSTEM
76.059

SUMMARY OF WORKSHOP ON ENVIRONMENTAL/ECOLOGICAL MAPPING NEEDS OF THE U.S. FISH AND WILDLIFE SERVICE HELD AT MONTEREY, CA. ON AUG 31-SEPT 2, 1976
76.160

SUPER EYES IN SKY MAP LAND USE DATA FOR STATE, COUNTIES
77.248

SURFACE 2 GRAPHICS SYSTEM
75.208

SURVEY OF DATA SOURCES FOR THE LAND USE AND URBAN DEVELOPMENT PROJECT. WORKING PAPERS
75.220

SURVEY OF GEOGRAPHICALLY-BASED INFORMATION SYSTEMS IN CALIFORNIA
75.159

SURVEY OF MAPPING SOFTWARE
77.029

SURVEY OF NATIONAL GEOCODING SYSTEMS
74.130 72.114 72.108

SURVEY OF NATIONAL GEOCODING SYSTEMS. FINAL REPORT. OCT. 73-JUNE 74
74.133

SURVEY OF RESEARCH AND DEVELOPMENT IN DISTRIBUTED DATABASE MANAGEMENT
77.197

SURVEY SUMMARY: URBAN PLANNING INFORMATION SYSTEMS
71.063

SURVEY TASK FORCE - PROJECT NO. 3 - REGISTRAR'S COMPILED PLANS
74.148

SURVEY TASK FORCE - PROJECT NO. 4 - CONVERSION USING EXISTING MAP BASE IN REGISTRY SYSTEM
74.149

SURVEY TASK FORCE - PROJECT NO. 7 - PHASE 1 - INFORMATION GATHERING
74.150

SURVEY TASK FORCE: PROJECT NO. 2- MAP BASE AND RESOURCE INVENTORY
74.096

SWEDISH EXPERIENCE: INNOVATIVE APPROACHES
76.124

SWEDISH LAND DATA BANK - A MULTIPURPOSE INFORMATION SYSTEM
77.202

SWEDISH LAND INFORMATION SYSTEMS
80.004

SWEDISH ROAD DATA BANK AND A DISTANCE TABLE PROJECT
77.141

SWEDISH ROAD DATA BANK AND ITS USE IN ROAD PLANNING
77.037

SYMAP AS AN AID TO TEACHING THEMATIC CARTOGRAPHY
79.105

SYMPOSIUM ON TITLE RECORDATION
73.145

SYMPOSIUM: COMPUTERIZATION OF LAND TITLE RECORDS
74.145

TITLE INDEX

A SYNOPSIS OF NATURAL RESOURCE MANAGEMENT AND ENVIRONMENTAL ASSESSMENT TECHNIQUES USING GEOGRAPHIC INFORMATION SYSTEM TECHNOLOGY
81.153

SYNTHESIS GUIDE FOR LINES OF COMMUNICATION
81.094

SYSTEM APPROACH TO LAND USE INVENTORIES AND INFORMATION SYSTEMS
76.140

A SYSTEM FOR AUTOMATED STEREO MAPPING
82.121

SYSTEM FOR DESCRIBING AND CLASSIFYING INFORMATION CONCERNING LAND FORMS
72.071

SYSTEM FOR DIGITAL MAPPING
75.200

SYSTEM FOR REGIONAL ANALYSIS OF WATER AVAILABILITY
77.131

SYSTEM FOR TOPOGRAHIC INQUIRY. NO. 3. ALPHA-NUMERIC SUBSYSTEM DATA BASE LISTING. FINAL REPORT JULY 70-30 JUNE 74
75.106

SYSTEM FOR TOPOGRAPHIC INQUIRY. NO. 2 ALPHANUMERIC SUBSYSTEM. FINAL REPORT JULY 70-JULY 74
75.105

SYSTEM FOR TOPOGRAPHIC INQUIRY. NUMBER 1. MICROGRAPHIC SUBSYSTEM. FINAL REPORT OCT. 70-SEPT. 73
74.060

SYSTEM OF GEOGRAPHICAL CLASSIFICATIONS
78.030

SYSTEM REQUIREMENTS DEFINITION FOR THE DEVELOPMENT AND IMPLEMENTATION OF THE ALBERTA PHOTOGRAMMETRIC CONTROL SYSTEM
83.217

SYSTEM REVIEW
70.052

SYSTEM SIMULATION WITH DIGITAL COMPUTER
83.213

A SYSTEM TO GENERATE VECTOR DATA BASES FROM A GRID INFORMATION SYSTEM
83.223

SYSTEM 360,000:AUTOMATED TAX COLLECTION AND ASSESSMENT UPDATING
70.059

SYSTEMATIC NEEDS ASSESSMENT PROJECT GEOGRAPHIC DISPLAY
76.068

SYSTEMATIC SERIES OF GRID CELLS
78.094

SYSTEMS ANALYSIS AND FOREST RESOURCE MANAGEMENT. PROCEEDINGS OF A WORKSHOP. SYSTEMS ANALYSIS WORKING GROUP. SOCIETY OF AMERICAN FORESTERS. ATHENS, GA. AUG. 11-13, 1975
75.154

SYSTEMS CONCEPTUALIZATION - TASK 2 REPORT (FINAL)
73.040

SYSTEMS OF AUTOMATIC CARTOGRAPHY
72.019

TAX MAPS AND THEIR LAND USE IMPLICATIONS
75.026

TAXABLE PROPERTY VALUES: PART AND HAPPILY, PARCEL, OF THE 1977 CENSUS OF GOVERNMENTS
76.015

TECHNICAL AND LEGAL ASPECTS OF A CADASTRE-BASED LAND INFORMATION SYSTEM
75.280

TECHNICAL ASPECTS AND PROBLEMS OF PARCEL NUMBER AND GEOCODING IDENTIFIERS
73.105

TECHNICAL FEATURES ESSENTIAL TO A MODERN MULTIPURPOSE LAND DATA SYSTEM
75.261

TECHNICAL GEOGRAPHIC REQUIREMENTS OF THE CADASTRE
77.129

TECHNICAL PAPERS OF THE AMERICAN CONGRESS ON SURVEYING AND MAPPING
81.139 81.138 81.137 81.136 81.135 81.134
81.133 81.132 81.131 81.130 81.129 81.128

TECHNICAL PAPERS OF THE AMERICAN CONGRESS ON SURVEYING AND MAPPING, 41ST ANNUAL MTG, 1981
81.056

TECHNICAL PROBLEMS IN A MULTIPURPOSE LAND DATA SYSTEM: THE DIGITAL GEOGRAPHIC SUBSYSTEM
79.044

TITLE INDEX

TECHNICAL PROBLEMS IN THE IMPLEMENTATION OF A MULTI-PURPOSE LAND DATA SYSTEM: THE FISCAL DATA SYSTEM
79.144

TECHNICAL SPECIFICATIONS FOR THE FILE FORMAT FOR DATA EXCHANGE BETWEEN GRAPHIC DATA BASES
78.073

TECHNIQUE FOR MAPPING ENVIRONMENTAL CHANGE USING DIGITAL LANDSAT DATA
82.009

TECHNIQUES FOR DATA ANALYSIS AND COMPUTER MAPPING OF SALES POTENTIAL BY 5 DIGIT ZIP CODES
80.006

TECHNIQUES FOR LAND USE CHANGE DETECTION USING LANDSAT IMAGERY
77.008

TECHNIQUES OF MANAGING DATA FOR THE INDUSTRIAL FORESTRY FIRM
75.255

TECHNOLOGY ASSESSMENT OF ADVANCES IN SCIENTIFIC AND TECHNICAL INFORMATION SERVICES
77.247

TEN YEARS OF URISA PROCEEDINGS, INDEXES AND ABSTRACTS
75.151

TERRAIN ANALYSIS AND MAPPING WITH THEMAPS AND SPASIS
82.212

TERRAIN ANALYSIS AND REMOTE SENSING
82.281

TERRAIN ANALYSIS DATABASE GENERATION THROUGH COMPUTER-ASSISTED PHOTO INTERPRETATION
83.090

TERRAIN ANALYSIS PROCEDURAL GUIDE FOR DRAINAGE AND WATER RESOURCES (REPORT NUMBER 8 IN THE ETL SERIES ON GUIDES FOR ARMY TERRAIN ANALYSTS)
82.064

TERRAIN AND CLOUD COMPUTER IMAGE GENERATION MODEL
79.064

TERRAIN PARAMETERS DIRECTLY FROM A DIGITAL TERRAIN MODEL
75.060

TERRAIN REPRESENTATION PANEL
76.116

TEXAS NATURAL RESOURCES INFORMATION SYSTEM
77.217

TEXAS NATURAL RESOURCES INFORMATION SYSTEM GEOGRAPHIC INFORMATION SYSTEM
79.218

TEXAS NATURAL RESOURCES INFORMATION SYSTEM: FORESTLAND MAPPING BY COMPUTER-ASSISTED ANALYSIS OF LANDSAT DATA
80.101

TEXTURE-TONE ANALYSIS FOR AUTOMATED LAND-USE MAPPING
78.084

THEMAP SOFTWARE SPECIALLY PROGRAMMED FOR SMALLER SYSTEMS
79.146

THEMATIC DIGITAL TERRAIN MAPS (DTM) FOR CROP CLASSIFICATION ANALYSIS OF LANDSAT DATA
80.070

THEMATIC MAP PRODUCTION FROM DIGITAL SPATIAL DATA
80.049

THEORETICAL AND PRACTICAL CONSTRAINTS OF A GEOGRAPHIC BASE FILE
73.001

THEORETICAL BASIS OF DUAL INDEPENDENT MAP ENCODING (DIME)
71.023

THEORY OF THE CARTOGRAPHIC LINE
75.185

THRESHOLD SELECTION USING QUAD TREES
82.255

TIMBER RESOURCE INFORMATION SYSTEM. PROGRESS REPORT
73.140

TIME TO STEP TOWARD A MODERN SYSTEM OF LAND PARCEL RECORDS
70.025

TIS: AN INTELLIGENT GATEWAY COMPUTER FOR INFORMATION AND MODELING NETWORKS, OVERVIEW
83.069

TO PROVIDE FOR A NATIONAL ENVIRONMENTAL DATA SYSTEM
71.076

TITLE INDEX

TO THE USERS CONFERENCE ON PROVINCIAL CO-ORDINATES
75.217 75.146 75.041

TOOLS FOR THE AUTOMATION OF MAP GENERALIZATION
74.114

TOPAZ/NETWORK ALLOCATION MODEL: GETTING FROM PLACE TO PLACE WITH EASE AND ECONOMY
79.228

TOPOG: A COMPUTERIZED WORLDWIDE TERRAIN ELEVATION DATA BASE GENERATION AND RETRIEVAL SYSTEM
81.023

TOPOGRAPHIC ANALYSIS OF A WILDLAND AREA BASED ON DIGITAL TERRAIN DATA
79.117

TOPOGRAPHIC ANALYSIS SYSTEM
77.003

TOPOGRAPHIC MAP REVISION USING SATELLITE IMAGERY
82.319

TOPOGRAPHIC MAPPING BASE
79.180

TOPOGRAPHIC SLOPE CORRECTION FOR ANALYSIS OF THERMAL INFRARED IMAGES
82.066

TOPOLOGICAL ENCODING OF POINTS IN A CADASTRAL MAPPING SYSTEM
77.076

TOPOLOGICAL INFORMATION SYSTEMS FOR GEOGRAPHIC REPRESENTATION
76.042

TOPOLOGICAL PRINCIPLES IN CARTOGRAPHY
75.063

TOPOLOGY AND THE CONCEPT OF THE STATISTICAL SOLID
83.187

TOWARD A COMPATIBLE LAND IDENTIFIER
72.076

TOWARD AUTOMATIC EXTRACTION OF CARTOGRAPHIC FEATURES
78.147

TOWARD THE DEVELOPMENT OF MODERN CADASTRAL STANDARDS
75.051

TOWARDS A COMPREHENSIVE FRAMEWORK FOR ENVIRONMENTAL STATISTICS: A STRESS-RESPONSE APPROACH
79.033

TOWARDS A NATIONAL DIGITAL TOPOGRAPHIC DATA BASE: EXPERIMENTS IN MASS DIGITISING, PARALLEL PROCESSING AND THE DETECTION OF CHANGE
83.198

TOWARDS A RENEWABLE-RESOURCE INFORMATION SYSTEM FOR USE AT THE REGIONAL AND LOCAL LEVEL
78.076

TOWARDS AN ECOLOGICAL INFORMATION SYSTEM
77.191

TOWARDS MODEL-ORIENTED GEOGRAPHIC INFORMATION SYSTEMS FOR EVALUATING THE SOCIO-ECONOMIC EFFECTS OF RESOURCE DEVELOPMENTS
82.161

TOWARDS MORE EXOTIC PRODUCTS FROM THEMATIC SOFTWARE: THE CASE OF THE PILLAR SYSTEM PROGRAMME
78.048

TOWARDS THE CALIBATION OF LANDSAT SPECTRAL VALUES: A NEW APPROACH INTEGRETING MAP DATA AND SATELLITE INFORMATION
80.072

TOWN PLANNING AIDED BY AN INTEGRATED MUNICIPAL LAND INFORMATION SYSTEM
82.286

TRADEOFFS AMONG SEVERAL SYNTHETIC APERTURE RADAR IMAGE QUALITY PARAMETERS: RESULTS OF A USER SURVEY STUDY
83.206

TRANES MODEL: A TOOL FOR TRANSIT AND FACILITIES PLANNING
79.113

TRANPLAN: AN INTERACTIVE GEOGRAPHIC INFORMATION SYSTEM FOR THE DESIGN AND ANALYSIS OF URBAN TRANSIT SYSTEMS
77.183

TRANSFER OF LAND USE AND LAND COVER AND ASSOCIATED MAPS INTO DIGITAL FORMAT
77.095

TRANSFER OF TECHNOLOGY - SYSTEM DESIGN CONSIDERATIONS
76.168

TITLE INDEX

TRANSFORMATION OF DATA INTO A RASTER-SCAN FORMAT AND SOME IMAGE PROCESSING APPLICATIONS
81.011

TRENDS IN DIGITAL DATA BASE MAINTENANCE TECHNIQUES IN THE 1980'S
78.066

TUTORIAL ON GEOGRAPHIC BASE FILES FOR SMALL-AREA DATA ANALYSIS
74.033

TVA'S GEOGRAPHIC INFORMATION SYSTEM: AN INTEGRATED RESOURCE DATA BASE TO AID ENVIRONMENTAL ASSESSMENT & RESOURCE MANAGEMENT
82.177

TVAMAP: A PROGRAMME FOR PLOTTING GEOGRAPHICALLY DISTRIBUTED DATA
74.115

TWENTIETH CENTURY REAL ESTATE BUSINESS AND EIGHTEENTH CENTURY RECORDING
73.086

TWO ASPECTS OF DOMAIN DESIGNING C $INFINITY$ CURVE RENDERING AND BLENDED MAP PROJECTIONS
81.055

TWO PROGRAM PACKAGES FROM THE U.K.: GIMMS AND MDS(X)
79.229

TWO WAY DATA TRANSFER BETWEEN ARIES IMAGE ANALYSIS SYSTEM AND ARC-INFO GEOGRAPHIC INFORMATION SYSTEM
83.129

U.S. ARMY INTELLIGENCE CENTER & SCHOOL USAICS, SOFTWARE ANALYSIS & MANAGEMENT SYSTEM ANALYSIS OF GEOGRAPHIC TRANSFORMATION ALGORITHMS
82.013

U.S. DEPARTMENT OF THE INTERIOR ENERGY-DATA FILES
75.157

U.S. GEOLOGICAL SURVEY DIGITAL CARTOGRAPHIC DATA ACQUISITION
79.140

U.W.O. SAFRAS SYSTEM
75.231

UNDERLYING REQUIREMENTS AND TECHNIQUES OF A GEOGRAPHIC DATA BASE
83.107

UNIDIRECTIONAL CODE FOR INTERACTIVE MAP SYSTEM
82.042

UNIFIED AUTOMATED LAND TITLE SYSTEM FOR WISCONSIN
71.012

UNIFORM LAND PARCEL IDENTIFIER: ITS POTENTIAL FOR ALL OUR LAND RECORDS
73.013

UNIMATCH EXPERIENCE WITH TRUCK SURVEY DATA
75.048

UNITED STATES GEOLOGICAL SURVEY DIGITAL CARTOGRAPHIC FILE MANAGEMENT SYSTEM
78.055

UNSUPERVISED MAPPING OF GEOLOGIC FEATURES AND SOILS IN CALIFORNIA
74.044

UPDATE AND MAINTENANCE OF GEOGRAPHIC BASE FILES INCLUDING A MAN-MACHINE GRAPHIC APPROACH. RESEARCH REPORT
71.013

UPDATE OF THE DIDS PROGRAM
80.043

UPDATED INVENTORY OF AGRICULTURAL COMPUTER PROGRAMS AVAILABLE FOR EXTENSION USE
82.153

UPDATING THE NATIONAL MAP ACCURACY STANDARDS
81.138

URBAN ATLAS PROJECT: HISTORICAL AND CARTOGRAPHIC REVIEW
75.213

URBAN CADASTRAL CARTOGRAPHY AND DATA BANK IN THE STATE OF MEXICO
74.046

URBAN CHANGE DETECTION SYSTEMS: STATUS AND PROSPECTS
71.025

URBAN COGO: A GEOGRAPHIC BASED LAND INFORMATION SYSTEM
71.065

URBAN CRIME PATTERNS
77.030

URBAN DEVELOPMENT INFORMATION SYSTEM TO AID PLANNING AND ZONING DECISION MAKING
72.053

TITLE INDEX

URBAN DEVELOPMENT INFORMATION SYSTEM. FINAL REPORT ON PHASES 1 AND 2
72.054

URBAN DEVELOPMENT INFORMATION SYSTEM: A LAND USE DECISION-MAKING TOOL IN FAIRFAX COUNTY, VIRGINIA
74.071

URBAN GEOCODING
74.048

URBAN GEOPROCESSING: STAGED DEVELOPMENT CONCEPT
80.062

URBAN INFORMATION SYSTEM OF THE NATIONAL CAPITAL COMMISSION
76.147

URBAN INFORMATION SYSTEMS. PART 1. GENERAL. VOLUME 1 1964-1976 (A BIBLIOGRAPHY WITH ABSTRACTS)
78.184

URBAN INFORMATION SYSTEMS. PART 1. GENERAL. VOLUME 2 1977-SEPT. (A BIBLIOGRAPHY WITH EXTRACTS)
78.185

URBAN PLANNING IN WICHITA FALLS, TX.: ONE YEAR AFTER USAC
77.180

URBAN SURVEYING AND MAPPING
79.191 79.014

URBAN-FIELD LAND USE FROM RB-57 PHOTOGRAPHY: THE BOSTON AND NEW HAVEN AREAS
72.085

URBAN, REGIONAL AND STATE APPLICATIONS. PLUS A SPECIAL SECTION ON CADASTRAL SYSTEMS. VOLUME 3
79.220 79.209 79.205 79.194 79.160 79.143
79.137 79.136 79.113 79.103 79.096 79.073
79.054 79.040 79.017 79.009 79.004

URBAN, REGIONAL, AND ENVIRONMENTAL INFORMATION: NEEDS, SOURCES, SYSTEMS, AND USES
81.156 81.155 81.154 81.153 81.152 81.151
81.150 81.149 81.148 81.147 81.146 81.145
81.144 81.143 81.142 81.141 81.140 81.053

USAC: CURRENT PERSPECTIVES
73.131

USE OF A COMPUTER FILE TO CONSTRUCT A MODEL OF CITY STREET
77.167

USE OF A COMPUTER-BASED RESOURCE DATA SYSTEM TO EVALUATE ON-SITE WASTE DISPOSAL ALTERNATIVES
77.036

USE OF A GEOGRAPHIC INFORMATION SYSTEM IN STORM RUNOFF PREDICTION
80.092

USE OF A GIS TO COMBINE LAND USE INFORMATION DERIVED FROM LANDSAT WITH SOILS DATA TO STRATIFY AN AREA IN ARGENTINA FOR CROP FORECASTING
82.105

USE OF ADDRESS CODING GUIDES IN GEOGRAPHIC CODING-CASE STUDIES. WICHITA, KS. NOV. 19-20, 1970
71.074

USE OF AN ANALYTICAL STEREOPLOTTER FOR ACQUIRING DIGITAL ELEVATION DATA
80.071

USE OF CAMS (COMPUTER AIDED MAPPING SYSTEM) AS A TEACHING TOOL
79.125

USE OF COLLATERAL INFORMATION TO IMPROVE LANDSAT CLASSIFICATION ACCURACIES
81.072

USE OF COMPUTER GRAPHICS IN COMMUNITY DEVELOPMENT PLANNING AND MANAGEMENT
79.194

USE OF COMPUTER MAPPING AND GRAPHICS IN PLANNING AND PUBLIC WORKS MANAGEMENT DECISION-MAKING: THE CASE OF CHICAGO
80.057

USE OF COMPUTER MAPPING IN POLICY STUDIES BY STATE GOVERNMENT
79.136

USE OF COMPUTER MAPS IN MULTIPLE REGRESSION ANALYSIS: A U.S. COUNTRY-MAP APPLICATION
80.060

USE OF COMPUTERS IN A PROPERTY ASSESSMENT SYSTEM
73.071

USE OF COMPUTERS IN FORESTRY
74.007

USE OF DIGITAL TERRAIN MODELING TO SUPPORT RESOURCE PLANNING IN THE FOREST SERVICE UNITED STATES, DEPARTMENT OF AGRICULTURE
78.068

TITLE INDEX

USE OF FINSYS IN DEVELOPING AND ACCESSING THE TIMBER AND WILDLIFE DATA BASES FOR THE 1980 NATIONAL ASSESSMENT
79.120

USE OF GEOGRAPHIC BASE FILES FOR GRAPHIC DISPLAYS
73.117

USE OF GEOGRAPHIC BASE FILES FOR UTILITY LOCATION AND CO-ORDINATION
78.152

USE OF GEOLOGIC AND WATER YIELD DATA FROM GROUND WATER BASED COMMUNITY WATER SYSTEMS AS A GUIDE FOR GROUND WATER PLANNING AND MANAGEMENT
82.073

USE OF GEOLOGICAL FIELD DATA SYSTEMS IN FINLAND: EXPERIENCES AND PROBLEMS
75.189

USE OF HIGH ALTITUDE AERIAL PHOTOGRAPHY TO INVENTORY WILDLIFE HABITAT IN KANSAS: AN INITIAL EVALUATION
74.078

THE USE OF INTEGRATED MAPPING SYSTEMS IN ENVIRONMENTAL IMPACT ASSESSMENT AND LAND USE PLANNING
82.227

THE USE OF INTEGRATED TERRAIN UNIT MAPPING FOR THE SITING OF ENERGY FACILITIES IN ANCHORAGE, ALASKA
82.206

USE OF INTERACTIVE COMPUTER GRAPHICS FOR OIL AND GAS EXPLORATION
75.003

THE USE OF LANDSAT DATA TO MONITOR THE URBAN GROWTH OF SAO PAULO METROPOLITAN AREA
82.059

USE OF LANDSAT IN COMPUTER DATA BASES
79.126

USE OF LANDSAT MSS DATA AND ANCILLARY DATA TO PRODUCE EROSION HAZARD POTENTIAL MAPS
80.087

USE OF NEEDLE-SORTED DATA BANKS IN GEOGRAPHIC INQUIRY
76.138

USE OF NOAA/AVHRR VISIBLE AND NEAR-INFRARED DATA FOR LAND REMOTE SENSING
81.123

USE OF ORTHOPHOTOGRAPHIC TECHNIQUES IN A MODERN CADASTRE INCLUDING A DATA BANK
74.058

USE OF REMOTE SENSING FOR LAND USE POLICY FORMULATION
82.050

USE OF SATELLITE IMAGERY FOR VERY SMALL SCALE MAPPING
75.165

USE OF SYNAGRAPHIC COMPUTER MAPPING IN GEOECOLOGY
79.019

THE USE OF TERRAIN HEIGHT INFORMATION FOR IMPROVING THE ACCURACY OF CLASSIFICATION OF LANDSAT DATA
82.046

USE OF THE ARIES SYSTEM FOR FOREST MANAGEMENT
78.129

USE OF THE DIME SYSTEM FOR IDENTIFICATION OF PLACES AND DESCRIPTION OF LOCATION
73.047

USE OF URBAN INFORMATION SYSTEM FOR COMPUTERIZED DISTRICTING AND MAPPING
70.009

USER NEEDS ASSESSMENT FOR AN OPERATIONAL GEOGRAPHIC INFORMATION SYSTEM: REGION 6, U.S. FISH AND WILDLIFE SERVICE
77.205

USER-ACCESSED COMPUTER INFORMATION SYSTEM FOR ENVIRONMENTALLY SENSITIVE WILDLIFE. VOLUMES 1, 2 AND 3
74.009

USER-ORIENTED SUMMARY AND DESCRIPTION OF THE DATA BASE, DATA PROCESSING SYSTEM AND COMPUTERIZED DOCUMENT RETRIEVAL SYSTEM EMPLOYED IN REGIONAL LAND USE STUDIES
71.022

USER'S CONFERENCE ON PROVINCIAL COORDINATES. EDMONTON, ALTA. MAY 12-13, 1975
75.289

USER'S GUIDE TO SUDA: A COMPUTERIZED DATA BANK FOR SORPTION COEFFICIENTS OF RADIONUCLIDES ON GEOLOGICAL MATERIAL
81.208

TITLE INDEX

USER'S MANUAL FOR CONPLT: A GENERAL PURPOSE CONTOUR PLOTTER
83.072

USER'S MANUAL FOR CONTUR. A CONTOUR PLOTTING PACKAGE
81.013

USER'S MANUAL: GEOGRAPHIC INFORMATION SYSTEM
81.101

USERS' MANUAL: RIDSPOLY GEOGRAPHIC INFORMATION SYSTEM
81.189

USES OF A STAND DATA BASE FOR FOREST MANAGEMENT
79.198

USES OF CRIB - A GIPSY FORMATTED MINERAL RESOURCES DATA FILE
75.045

USES OF HOLOGRAPHY IN THEMATIC CARTOGRAPHY
74.140

USGS DIGITAL CARTOGRAPHIC PILOT PROJECTS
79.013

USGS GEOGRAPHIC INFORMATION RETRIEVAL AND ANALYSIS SYSTEM: OVERVIEW
79.085

USING COMPUTER-ASSISTED CARTOGRAPHY TO MAP THE U.S. ENERGY SYSTEM
78.050

USING COMPUTERIZED MAPS WITH NORTH CAROLINA COORDINATES
76.064

USING COMPUTERS TO MAKE WISE LAND USE DECISIONS
79.184

USING FISCAL MODELS TO EVALUATE LAND PLANS - THE SUBUBAN MONTGOMERY COUNTY, MARYLAND EXPERIENCE
80.037

USING INTERACTION COMPUTER MAPPING TO TEACH CARTOGRAPHIC CONCEPTS AT MIDDLEBURY COLLEGE
80.022

USING QUADTREES TO REPRESENT SPATIAL DATA
83.210

UTILITY OF REMOTE SENSING DATA FOR URBAN LAND USE PLANNING
72.040

THE UTILITY/MUNICIPAL MARKET FOR MAPPING
83.057

UTILIZATION OF COMPUTER GRAPHICS IN POLICE PLANNING OPERATIONS
79.103

THE UTILIZATION OF INTERACTIVE GRAPHICS IN TRAVEL DEMAND MODELING
83.146

UTILIZATION OF LANDSAT IMAGES IN CARTOGRAPHY (UTILIZACAO DE IMAGENS LANDSAT NA CARTOGRAFIA)
81.032

UTILIZING LANDSAT DIGITAL DATA FOR OPERATING TWO HYDROLOGIC MODELS
82.231

UTMDIR: COMPUTATION OF UTM (UNIVERSAL TRANSVERSE MERCATOR) COORDINATES
82.012

VALUE OF FORSYTH COUNTY'S LAND RECORD SYSTEM TO ASSESSING ENVIRONMENTAL IMPACTS AT THE STATE LEVEL
76.053

VALUE OF THE FORSYTH SYSTEM TO THE FEDERAL GOVERNMENT
76.117

VECTOR AND ARC ENCODING OF GRAPHICS AND TEXT
82.091

VECTOR/RASTER OPTIONS FOR DIGITAL CARTOGRAPHIC DATA
82.322

VECTORIZATION OF RASTER IMAGES USING HIERARCHICAL METHODS
82.249

VEGETATION AND LAND COVER MAP AND DATA FOR AN ENVIRONMENTAL IMPACT STATEMENT, ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA:
82.225

VEGETATION AND TERRAIN EFFECTS ON DIGITAL CLASSIFICATION OF LANDSAT IMAGERY
82.018

VERTICAL INTEGRATION OF PROPERTY DATA
75.109

TITLE INDEX

A VIDEODISC BASED TERRAIN MAP DISPLAY SYSTEM
82.288

VIEW IT: COMPUTATION OF SEEN AREAS, SLOPE, AND ASPECT FOR LAND-USE PLANNING. GENERAL TECHNICAL REPORT
75.243

VIRTUAL MAPPING: A SIG-GBF WORKING PAPER
73.137

VISUAL EVALUATION OF SIDE-LOOKING AIRBORNE RADAR (SLAR) IMAGERY
82.061

VOICE DATA ENTRY FOR CARTOGRAPHIC APPLICATIONS
77.019

VOL. 2 - DATA MANIPULATION PROGRAMS
81.198

VOL. 3 - CARTOGRAPHY AND GRAPHICS
81.199

VOLUME I - AUTOMATED CARTOGRAPHY: INTERNATIONAL PERSPECTIVES ON ACHIEVEMENTS AND CHALLENGES
83.202 83.201 83.200 83.199 83.198 83.197
83.196 83.195 83.194 83.193 83.192 83.191
83.190 83.189 83.188 83.187 83.186 83.185
83.184 83.183 83.182 83.181 83.180 83.179
83.178 83.177 83.176 83.175 83.174 83.173
83.172 83.171 83.170 83.169 83.168 83.167
83.166 83.165 83.164 83.163 83.162 83.161

VOLUME I - FULL GEOGRAPHIC INFORMATION SYSTEMS
81.197

VOLUME II - AUTOMATED CARTOGRAPHY: INTERNATIONAL PERSPECTIVES ON ACHIEVEMENTS AND CHALLENGES
83.132 83.131 83.130 83.129 83.128 83.127
83.126 83.125 83.124 83.123 83.122 83.121
83.120 83.119 83.118 83.117 83.116 83.115
83.114 83.113 83.112 83.111 83.110 83.109
83.108 83.107 83.106 83.105 83.104 83.103
83.102 83.101 83.100

WATERSHED MANAGEMENT MODELING
82.122

WATSTORE-THE U.S. GEOLOGICAL SURVEY'S NATIONAL WATER DATA STORAGE AND RETRIEVAL SYSTEM
75.253

WEIGHTED LINE-FINDING ALGORITHM
79.002

WESTERN REPORT: FOREST MANAGEMENT. AUTOMATION IMPROVES METHODS OF FOREST MANAGEMENT AND INVENTORY
79.230

WETLANDS ANALYTICAL MAPPING SYSTEM
78.125

WHERE DO WE GO FROM HERE?
75.015

WHERE WILL LANDSAT FOLLOW-ON IMAGE DATA FIT IN THE GEOGRAPHICAL HIERARCHY OF PLANNING INFORMATION SYSTEMS
76.044

WILDLAND INVENTORY AND RESOURCE MODELING FOR DOUGLAS AND CARSON CITY COUNTIES, NEVADA, USING LANDSAT AND DIGITAL TERRAIN DATA
83.021

WORKSHOP ON COMPUTER-BASED SYSTEMS FOR SPATIAL DATA IN GEOLOGICAL SCIENCES
75.218

WORKSHOP ON RENEWABLE RESOURCE INFORMATION SYSTEMS FOR THE MARITIMES. FIRST DRAFT
79.041

WORKSHOP SESSIONS: MULTICOUNTY CONSOLIDATION OF TITLE INFORMATION
71.078

WRAP-A WOODLAND RESOURCE ANALYSIS PROGRAM
79.086

WRIS: A RESOURCE INFORMATION SYSTEM FOR WILDLAND MANAGEMENT
75.207

THE XYNIMAP FAMILY OF PROGRAMS FOR GEOGRAPHIC INFORMATION PROCESSING AND THERMATIC MAP PRODUCTION
83.100

XYZ PHENOMENON: STEREOSCOPIC PLOTTING BY COMPUTER
79.174

ZIPSTAN STANDARDIZATION SYSTEM
75.085

THE 1980 LAND COVER FOR THE PUGET SOUND REGION
82.011

3-D GRAPHIC DISPLAY OF DISCRETE SPATIAL DATA BY PRISM MAPS
78.062

TITLE INDEX

360/20 COMPUTER MAPPING PROGRAMME
72.070

SUBJECT INDEX

SUBJECT INDEX

AGRICULTURAL INFORMATION/SYSTEMS
83.181 83.160 83.064 83.037 82.153 82.109
81.207 81.129 81.105 81.052 81.046 81.045
78.123 77.221 76.093 75.170 75.169 72.096

AGRICULTURAL RESOURCES
82.146 81.206

ALBERTA INFORMATION/SYSTEMS
83.217 83.162 82.313 82.310 82.300 82.149
81.176 81.118

ASSESSMENT INFORMATION/SYSTEMS
80.107 80.102 80.090 80.006 79.193 79.091
77.245 77.195 77.138 77.068 77.006 76.170
76.141 76.113 76.110 76.015 75.23[illegible] 75.221
75.114 75.107 75.049 75.026 75.006 73.071
73.007 73.003

AUSTRALIA
81.068 77.057 77.010 76.028 74.129 74.023

BIBLIOGRAPHY
83.094 83.087 83.086 83.084 83.083 83.082
83.048 83.046 83.039 83.004 83.003 82.292
82.155 82.143 82.141 82.136 82.126 82.125
82.068 82.058 82.052 81.109 81.108 81.100
81.097 81.096 81.042 79.037 79.036 79.035
79.034 79.017 78.185 78.184 78.118 78.117
76.152 76.139 75.152 73.131 72.112 72.099
72.078

CADASTRAL SYSTEMS
83.218 83.033 82.314 82.201 80.107 80.091
80.084 80.063 80.053 80.047 80.045 80.030
80.021 79.205 79.177 79.176 79.172 79.171
79.161 79.137 79.129 79.111 79.078 79.017
79.014 79.009 78.179 78.089 77.245 77.242
77.211 77.190 77.168 77.129 77.113 77.081
77.076 77.064 77.060 77.059 77.049 77.045
77.020 77.006 76.188 76.181 76.179 76.177
76.170 76.141 76.121 76.117 76.115 76.105
76.104 76.097 76.095 76.061 76.053 76.051
76.050 76.045 76.039 76.027 76.025 76.020
76.015 75.280 75.276 75.272 75.271 75.270
75.262 75.261 75.234 75.210 75.203 75.201
75.193 75.191 75.180 75.179 75.167 75.166
75.143 75.141 75.114 75.109 75.103 75.101
75.098 75.091 75.089 75.069 75.051 75.049
75.046 75.037 75.033 75.030 75.023 75.022
75.016 75.015 75.012 75.002 74.141 74.129
74.128 74.109 74.104 74.099 74.070 74.063
74.061 74.058 74.056 74.051 74.048 74.046
74.015 74.014 74.008 74.003 73.145 73.142
73.116 73.107 73.098 73.097 73.096 73.090
73.089 73.077 73.071 73.031 73.026 73.020
73.017 73.005 72.076 71.082 71.079 71.078
71.071 71.058 71.051 71.050 71.044 71.036
71.012 71.010 71.005 70.061 70.060 70.059
70.054 70.048 70.047 70.043 70.040 70.035
70.025 70.004

CARTOGRAPHIC DATA BASE
83.176 83.174 83.036 82.184 81.192 80.049
80.013 79.213 79.208 79.151 79.095 79.059
79.052 75.081 72.015

CARTOGRAPHIC FEATURE
82.040 81.024

CARTOGRAPHIC INFORMATION/SYSTEMS
81.137 81.018 80.099 80.082 80.022 80.010
79.201 79.189 79.130 79.121 79.098 79.097
78.169 78.147 78.121 78.083 78.050 78.044
78.043 78.036 78.034 78.020 78.012 77.234
77.216 77.193 77.181 77.177 77.157 77.144
77.121 77.117 77.044 77.026 77.025 77.019
76.166 76.153 76.150 76.125 76.098 76.096
76.091 76.083 76.080 76.077 76.066 76.058
76.037 76.029 76.023 76.013 76.011 75.278
75.277 75.263 75.252 75.246 75.241 75.240
75.213 75.211 75.187 75.161 75.160 75.156
75.144 75.138 75.128 75.116 75.090 75.087
75.063 74.006 73.126 71.040

CARTOGRAPHIC TECHNIQUES
83.199 82.221 82.089 82.035 81.041 81.038
81.024 80.112 80.018 80.017 79.201 79.174
78.034 77.209 77.171 77.001 76.166 75.185
74.039 73.023

CENSUS INFORMATION/SYSTEMS
73.023

CHOROPLETH MAPS/MAPPING
82.240 80.014 79.203 79.151 79.053 78.019
77.173 77.140 77.024 76.176 75.213 75.167
75.145 74.081 73.143

CLIMATOLOGICAL INFORMATION/SYSTEMS
81.078 81.008 77.114 75.121 75.095 75.050
74.055 72.116

COMMUNICATION SYSTEM
83.095

COMPUTER
83.167 83.109 83.067 83.065 82.268 81.200
81.122 81.030

COMPUTER BASED INFORMATION/SYSTEMS
83.076 83.014 82.317 82.313 82.166 81.069
80.099 80.097 80.053 80.041 80.029 79.224
79.194 79.186 79.184 79.183 79.163 79.112
79.100 79.081 79.051 79.016 79.011 79.003
78.191 78.190 78.147 78.144 78.117 78.078
78.028 78.010 78.007 78.005 77.252 77.250
77.238 77.233 77.229 77.227 77.208 77.194
77.182 77.181 77.173 77.167 77.157 77.145
77.143 77.138 77.135 77.121 77.114 77.110
77.097 77.080 77.078 77.066 77.061 77.036
77.034 77.031 77.024 77.013 76.178 76.175
76.172 76.163 76.158 76.155 76.129 76.102
76.098 76.097 76.096 76.089 76.087 76.064
76.056 76.048 76.037 76.030 76.003 75.288
75.287 75.282 75.263 75.260 75.258 75.257
75.251 75.245 75.244 75.240 75.231 75.228
75.222 75.218 75.204 75.194 75.190 75.176
75.168 75.163 75.155 75.137 75.126 75.123
75.119 75.104 75.092 75.064 74.145 74.142

SUBJECT INDEX

74.141 74.125 74.124 74.118 74.111 74.080
74.064 74.062 74.052 74.043 74.036 74.031
74.024 74.019 74.013 73.134 73.123 73.093
73.078 73.071 73.046 73.025 73.003 72.069
72.058 72.057 72.049

COMPUTER GRAPHICS
83.216 83.208 83.207 83.163 83.142 83.073
83.058 82.195 82.126 82.125 82.123 82.104
82.088 82.086 81.191 81.190 81.149 81.104
81.100 81.097 81.096 80.113 80.112 80.109
80.064 80.059 80.057 80.006 79.224 79.194
79.189 79.164 79.143 79.127 79.105 79.103
79.037 79.036 79.035 79.034 79.027 79.024
79.015 78.174 78.169 78.165 78.087 78.043
78.037 77.246 77.179 77.164 77.126 77.106
77.100 77.098 77.094 77.092 77.075 77.047
77.025 77.023 77.018 76.118 76.071 76.068
76.067 76.031 75.273 75.269 75.228 75.214
75.209 75.208 75.184 75.171 75.160 75.159
75.158 75.148 75.086 75.073 75.059 75.036
75.035 75.028 75.007 75.003 75.001

COMPUTER MAPPING
83.226 83.222 83.213 83.201 83.182 83.181
83.175 83.171 83.154 83.138 83.127 83.125
83.117 83.116 83.113 83.110 83.070 83.068
83.061 83.060 83.058 83.032 83.030 83.029
83.025 83.014 83.009 83.004 83.003 83.001
82.311 82.267 82.235 82.233 82.216 82.214
82.213 82.203 82.194 82.191 82.183 82.172
82.166 82.164 82.160 82.121 82.114 82.113
82.104 82.093 82.091 82.081 82.080 82.070
82.069 82.063 82.062 82.056 82.054 82.044
82.035 82.023 82.010 81.178 81.171 81.157
81.135 81.109 81.108 81.104 81.069 81.057
81.044 81.038 81.030 81.026 81.025 81.001
80.118 80.117 80.116 80.109 80.106 80.100
80.099 80.095 80.088 80.086 80.082 80.080
80.077 80.060 80.057 80.055 80.053 80.032
80.028 80.022 80.019 80.018 80.017 80.014
80.003 79.221 79.217 79.216 79.214 79.210
79.199 79.187 79.182 79.179 79.174 79.160
79.154 79.149 79.141 79.136 79.134 79.132
79.127 79.125 79.121 79.115 79.114 79.109
79.102 79.101 79.093 79.092 79.088 79.072
79.068 79.066 79.059 79.056 79.055 79.050
79.049 79.047 79.026 79.022 79.019 79.017
79.009 79.008 79.003 78.183 78.177 78.174
78.171 78.152 78.144 78.124 78.112 78.093
78.092 78.090 78.087 78.083 78.082 78.081
78.052 78.051 78.050 78.040 78.036 78.031
78.020 78.018 78.012 78.011 78.005 77.238
77.234 77.216 77.193 77.177 77.157 77.121
77.117 77.105 77.102 77.044 77.023 77.017
77.016 76.185 76.172 76.171 76.166 76.143
76.125 76.119 76.112 76.109 76.101 76.091
76.083 76.067 76.062 76.037 76.034 76.023
75.278 75.263 75.256 75.246 75.240 75.226
75.211 75.198 75.197 75.187 75.186 75.181
75.177 75.176 75.175 75.174 75.172 75.164
75.162 75.158 75.150 75.147 75.145 75.138
75.128 75.127 75.126 75.121 75.120 75.115
75.108 75.102 75.100 75.094 75.093 75.092
75.090 75.071 75.065 75.063 75.055 75.047
75.045 75.040 75.036 75.035 75.032 75.028
75.027 75.017 75.013 75.011 75.010 74.135
74.134 74.115 74.114 74.113 74.111 74.108
74.107 74.104 74.100 74.084 74.081 74.066
74.053 74.046 74.039 74.027 74.022 74.020
74.010 74.007 73.141 73.126 73.124 73.113
73.095 73.085 73.084 73.082 73.076 73.068
73.067 73.059 73.048 73.021 72.116 72.103
72.099 72.078 72.077 72.070 72.019 72.005
71.081 71.070 71.069 71.064 71.049 71.047
71.040 71.035 71.032 71.021 71.010 71.007
70.050 70.049 70.046 70.029 70.011 70.009
70.008 70.007 70.006 70.005

COMPUTER PROCESSING
83.092 83.066 83.019 82.247 82.151 81.047
72.020 72.015

CONFERENCE PROCEEDINGS
83.020 82.295 82.294 81.116 80.105 80.083
80.074 79.227 79.226 79.212 79.082 79.021
79.008 79.001 78.175 78.157 78.132 78.113
78.105 78.104 78.100 78.094 78.091 78.081
78.077 78.074 78.073 78.072 78.066 78.065
78.064 78.063 78.055 77.235 77.223 77.222
77.219 77.196 77.178 77.144 77.143 77.139
77.127 77.093 77.086 77.084 77.072 77.064
77.052 77.040 77.020 77.013 77.006 76.188
76.159 76.156 76.148 76.147 76.145 76.143
76.141 76.140 76.119 76.116 76.115 76.083
76.057 76.054 76.049 76.041 76.040 76.034
76.029 76.026 76.024 76.023 76.022 76.003
76.001 75.286 75.284 75.270 75.267 75.263
75.262 75.261 75.246 75.239 75.164 75.157
75.151 75.136 75.128 75.122 75.096 75.087
75.061 75.040 75.039 75.017 75.015 75.009
75.003 75.002 74.140 74.129 74.111 74.105
74.077 74.075 74.070 73.135 73.123 73.100
73.082 73.073 73.024 73.015 72.119 72.115
72.106 72.100 72.097 72.096 72.092 72.080
72.069 72.068 72.065 72.061 72.060 72.059
72.031 72.006 72.003 71.080

CONTOURING
83.109 83.072 83.071 82.261 82.171 82.045
82.026 81.090 81.013 80.027 79.067 79.061
78.060 77.252 77.106 76.078 75.274 75.208
75.100 75.066 74.135 74.038 73.093 72.111
72.086 71.061 71.043 71.019

COORDINATE GRAPHICS
76.071

COORDINATE SYSTEMS
81.029 81.028 80.081 80.053 79.165 79.111
79.083 76.179 76.107 76.064 76.032 75.289
75.270 75.265 75.238 75.237 75.229 75.217
75.201 75.195 75.176 75.146 75.113 75.041
75.033 75.007 74.121 74.042 73.108 73.072
73.048 71.068 70.046 70.044 70.024 70.018

DATA ACCURACY
79.211 76.186 75.136

DATA ANALYSIS
81.114 79.136 79.086 77.055 75.067 72.093
72.086 71.054 71.033 70.060

SUBJECT INDEX

DATA BASE DESCRIPTIONS
83.178 83.116 83.112 83.074 82.299 82.263
82.155 82.134 82.133 82.128 82.118 82.112
81.107 81.095 81.086 81.081 81.070 81.002
80.034 78.035 78.032 77.035 77.021 77.004
75.112

DATA BASE DEVELOPMENT (SEE ALSO SYSTEM DEVELOPMENT)
82.228 81.091 81.020 81.017 79.220 79.162
79.160 79.148 79.141 79.126 79.120 79.102
79.080 79.074 79.066 78.159 78.139 78.088
78.021 78.014 77.254 77.237 77.218 77.209
77.204 77.199 77.172 77.116 77.079 77.067
77.058 76.094 75.050 74.111 73.058 73.001
72.101 72.092 70.026

DATA BASE MANAGEMENT
83.190 83.062 82.202 82.197 81.137 79.130
77.230 77.197 77.054 74.104 72.004

DATA BASE SUPPORT SYSTEMS
83.142 83.006 81.162 81.130 81.106 81.003
81.002 78.076 77.164 77.160 73.016

DATA CLASSIFICATION
79.046 78.143 77.088 77.053 77.034 75.238
75.205 75.119 75.097 75.029 74.124 74.044
73.068 73.007 72.091 72.086 72.076 72.075
71.052

DATA DISPLAY
79.197 79.188 79.110 79.107 79.103 79.075
79.066 79.060 79.025 79.023 75.230 72.041

DATA HANDLING ALGORITHMS
83.135 83.044 83.026 83.022 82.254 82.079
82.040 82.024 82.013 82.004 80.026 80.025
79.170 79.155 79.087 79.002 78.039 77.156
76.071 75.226 75.186 75.183 75.177 75.164
75.085 75.066 75.064 75.060 75.039 75.011
73.051 72.111 71.028 71.002

DATA INVENTORY
72.004

DATA PROCESSING
83.196 83.132 82.305 81.128 81.060 81.020
80.117 79.012 77.156 77.074 73.065 73.047
73.034 73.033 73.032 72.023 72.008 71.060
71.053 71.022 70.052 70.051 70.030 70.024

DATA REFERENCING
79.172 79.171 79.129 79.128 79.078 78.106
77.242 77.202 77.111 77.045 76.188 76.171
76.169 76.168 76.149 76.134 76.090 76.059
76.046 76.024 76.018 76.014 75.275 75.272
75.265 75.247 75.229 75.210 75.202 75.180
75.167 75.166 75.141 75.114 75.078 75.070
75.046 75.043 75.033 75.030 75.023 75.002
74.136 74.118 74.109 74.097 74.049 74.042
74.008 74.003 73.145 73.136 73.107 73.098
73.097 73.096 73.090 73.081 73.077 73.071
73.064 73.050 73.017 73.012

DATA REPRESENTATION
76.052

DATA STORAGE
83.062 75.029 74.033 73.083 73.047 73.045
72.010 71.072 70.030

DATA STRUCTURES
83.210 83.209 83.173 83.099 82.321 82.303
82.302 82.245 82.167 82.155 82.001 81.188
81.165 81.079 80.103 79.155 79.135 79.064
78.138 78.101 77.156 77.154 77.107 77.022
76.041 76.023 75.182 75.139 75.064 75.039
74.097 74.029 73.122 72.107

DEFENSE INFORMATION SYSTEMS
83.092

DIGITAL DATA BASE
83.224 83.211 83.197 83.195 83.192 83.114
82.322 82.266 82.228 82.178 82.130 82.112
82.095 82.065 82.063 81.166 81.160 81.133
80.067 80.049 79.140 79.085 79.039 79.013
78.132 78.111 78.102 78.066 77.226 77.149
77.086 77.018 76.116 76.080 76.049 75.081
72.047 72.022

DIGITAL ELEVATION DATA
83.047 81.019 81.017 80.071 79.117 78.054
78.026 77.246

DIGITAL ELEVATION MODELS
83.111 82.262 82.260 82.259 82.171 81.173
80.105 80.098 80.026 78.099 77.228

DIGITAL IMAGE INTERPRETATION
82.226 82.109 81.103 81.033 80.093 79.192
78.161 78.158 78.060 78.051 77.033 77.014
75.177 75.084 75.060 75.024 74.057

DIGITAL TOPOGRAPHIC DATA
83.128 82.309 82.308 82.003 81.088

DIGITIZING SYSTEMS
82.171 82.038 81.115 81.037 80.042 79.221
79.106 79.084 79.062 79.039 79.020 79.016
78.120 78.111 78.100 78.096 78.086 78.082
78.072 78.045 78.009 77.244 77.226 77.224
77.163 77.117 77.095 77.090 77.070 77.027
77.015 77.009 76.165 76.157 76.119 76.106
76.099 76.065 76.022 76.010 75.279 75.277
75.244 75.240 75.216 75.200 75.199 75.197
75.147 75.144 75.138 75.122 75.095 75.038
74.113 74.068 74.057 74.021 73.082 73.051
73.030 73.022 72.116 72.061 72.022 72.017
72.015 71.064 71.043 71.031 71.018 71.003
70.044 70.008

DIMENSIONS OF SURFACES
83.026

ECONOMIC ASPECTS
74.099 73.126 73.011 72.088 72.067

SUBJECT INDEX

EDGE/MATCHING
83.017 72.059

EDUCATIONAL APPLICATIONS
80.080 80.011 79.216 79.204 79.187 79.133
79.125 79.121

ENERGY INFORMATION/SYSTEMS
74.043

ENERGY RESOURCE DATA/SYSTEMS
82.221 82.206 80.085 80.040 79.222 79.189
79.186 79.152 79.056 79.038 78.189 78.183
78.165 78.140 78.092 77.175 77.174 77.166
77.110 76.186 76.122 76.036 76.035 75.229
75.003 74.143 73.101 72.049

ENGINEERING/APPLICATIONS
80.038 80.007 78.188 75.205 75.031 73.085

ENVIRONMENTAL DATA
83.052 82.132 82.026 81.179 81.155 81.125
79.123 79.122 72.063

ENVIRONMENTAL INFORMATION/SYSTEMS
83.220 83.158 83.140 83.067 83.052 83.014
82.313 82.244 82.137 81.053 80.115 79.201
79.190 79.162 79.145 79.077 79.033 78.167
78.165 78.164 78.162 78.125 78.120 78.092
78.065 78.032 78.023 78.021 77.253 77.213
77.201 77.194 77.191 77.092 77.083 77.034
76.161 76.160 76.120 76.072 76.053 76.028
76.021 76.008 76.007 76.006 76.005 75.265
75.259 75.139 75.118 75.093 75.059 75.005
75.004 74.106 74.076 74.040 74.029 74.026
73.004 72.059 72.041 72.018 71.076 70.051
70.050 70.008

ENVIRONMENTAL PLANNING/MANAGEMENT
83.180 83.179 83.157 83.091 83.070 82.316
82.299 82.296 82.243 82.225 82.185 82.155
82.075 82.074 81.203 81.164 78.146 77.200
77.133 74.102 74.076

FILE MAINTENANCE
77.236 77.142 77.129 77.125 77.101 76.132
76.090 75.255 75.134 75.103 75.070 73.145
73.136 73.082 73.066 73.011 72.077 72.068
72.061 72.056 72.029

FILE STRUCTURES
80.095 80.030 79.200 79.190 79.150 79.140
79.088 79.084 79.030 78.157 78.128 78.127
78.116 78.115 78.114 77.240 77.228 77.227
77.152 77.090 77.086 77.045 77.015 76.135
76.090 76.060 76.029 76.025 75.280 75.247
75.191 75.175 75.152 75.083 75.082 75.048
75.047 75.021 74.134 74.131 74.116 74.106
74.062 74.043 74.003 73.144 73.128 73.125
73.117 73.093 73.080 73.064 73.047 73.030
73.016 73.015 72.119 72.118 72.107 72.081

FLOOD MAPS/MAPPING
83.114 81.098 80.035 80.001 78.059 75.084

FORESTRY APPLICATIONS
83.120 83.088 83.056 82.262 82.072 81.073
81.031 79.230 76.069 75.255 75.197 75.122
74.112 71.003 70.031

FORESTRY INFORMATION/SYSTEMS
83.089 82.099 82.097 82.072 81.204 81.102
81.095 81.084 81.064 80.068 79.230 79.225
79.198 79.173 79.168 79.153 79.138 79.128
79.120 79.112 79.104 79.100 79.090 79.086
79.045 78.191 78.163 78.160 78.129 78.119
78.068 78.053 78.031 78.016 77.136 77.075
77.042 76.164 75.212 75.207 75.154 75.147
75.140 75.122 75.072 74.007 73.140

FRACTAL DIMENSIONS
82.117

GENERALIZED BALANCED TERNARY
81.089

GEOGRAPHIC DATA BASES
83.225 83.143 83.107 82.324 82.289 82.257
82.250 82.204 82.192 82.168 82.103

GEOGRAPHIC INFORMATION/SYSTEMS
84.001 83.192 83.188 83.185 83.183 83.179
83.172 83.166 83.163 83.161 83.153 83.152
83.151 83.129 83.124 83.118 83.113 83.101
83.100 82.326 82.325 82.301 82.273 82.253
82.251 82.242 82.222 82.199 82.181 82.177
82.176 82.169 82.161 82.156 82.154 82.127
82.115 82.106 82.101 82.019 81.194 81.189
81.187 81.186 81.185 81.182 81.161 81.154
81.153 81.136 81.101 81.067 81.060 81.020
80.115 80.103 80.092 80.065 80.059 80.042
80.033 80.031 80.012 80.002 79.218 79.210
79.207 79.181 79.156 79.133 79.118 79.108
79.028 79.004 78.172 78.157 78.156 78.155
78.151 78.142 78.136 78.135 78.130 78.116
78.093 78.079 78.071 78.069 78.049 78.046
78.041 78.025 78.024 78.017 78.008 78.001
77.245 77.234 77.231 77.217 77.214 77.210
77.205 77.203 77.198 77.192 77.188 77.186
77.183 77.172 77.170 77.169 77.160 77.153
77.147 77.135 77.134 77.127 77.112 77.107
77.097 77.087 77.082 77.078 77.077 77.056
77.055 77.050 77.046 77.043 77.041 77.038
77.033 77.021 77.007 76.185 76.182 76.180
76.175 76.173 76.157 76.155 76.149 76.148
76.145 76.139 76.138 76.106 76.062 76.044
76.043 76.042 76.001 75.267 75.194 75.159
75.097 75.076 75.073 75.041 74.144 74.041
74.030 74.019 73.139 73.128 73.099 73.083
73.073 73.070 73.008 72.119 72.113 72.091
72.088 72.081 72.068 72.067 72.066 72.065
72.045 72.029 72.018 72.016 72.012 72.001
71.077 71.065 71.060 71.030 71.013 71.006
71.001 70.052 70.027

SUBJECT INDEX

GEOGRAPHIC REFERENCING
83.204 83.131 83.130 83.059 82.302 82.276
82.236 82.200 82.196 82.193 82.143 82.012
81.193 81.148 81.132 81.120 81.116 81.093
81.079 81.068 80.081 80.067 80.062 80.061
80.056 80.028 80.002 79.223 79.217 79.191
79.171 79.131 79.095 79.088 79.063 79.032
78.192 78.190 78.175 78.171 78.139 78.137
78.130 78.113 78.104 78.094 78.091 78.089
78.079 78.077 78.074 78.064 78.042 78.038
78.026 78.025 78.014 78.001 77.254 77.227
77.221 77.199 77.198 77.182 77.181 77.168
77.165 77.158 77.128 77.123 77.113 77.103
77.093 77.092 77.086 77.079 77.060 77.057
77.048 77.032 77.015 77.005 76.180 76.179
76.173 76.169 76.167 76.159 76.149 76.137
76.136 76.090 76.024 75.289 75.285 75.238
75.223 75.215 75.201 75.200 75.195 75.173
75.156 75.152 75.146 75.124 75.119 75.113
75.088 75.085 75.074 75.048 75.032 75.022
75.019 75.001 74.133 74.132 74.131 74.130
74.121 74.120 74.119 74.105 74.098 74.097
74.075 74.067 74.063 74.048 74.033 74.025
74.012 74.011 74.001 73.144 73.135 73.131
73.129 73.125 73.121 73.117 73.112 73.109
73.108 73.105 73.094 73.065 73.062 73.060
73.057 73.048 73.031 73.014 73.011 73.002
73.001 72.118 72.113 72.108 72.107 72.106
72.100 72.097 72.080 72.079 72.068 72.060
72.044 72.036 72.029 72.007 72.006 71.082
71.075 71.074 71.073 71.072 71.067 71.059
71.053 71.044 71.034 71.031 71.029 71.028
71.023 71.021 71.017 71.011 71.009 71.007
71.006 70.058 70.057 70.056 70.054 70.048
70.047 70.038 70.036 70.032 70.028 70.027
70.023 70.020 70.018 70.016 70.013 70.012
70.002

GEOLOGICAL INFORMATION/SYSTEMS
83.168 83.121 82.095 82.074 81.208 81.158
81.157 81.065 81.061 81.042 79.224 79.196
79.179 79.140 79.089 79.085 79.019 79.013
78.182 78.035 78.013 77.253 77.125 77.110
77.104 76.183 76.093 76.087 76.076 76.074
76.036 76.033 75.287 75.284 75.281 75.268
75.266 75.256 75.231 75.218 75.202 75.190
75.189 75.163 75.137 75.126 75.123 75.099
75.083 75.044 75.034 75.029 74.116 74.044
74.013 73.056 72.115 72.109 72.083 72.052
72.020 70.011

GEONAMES DATABASE
83.032

GEOPHYSICAL INFORMATION/SYSTEMS
82.139

GEOPROCESSING
81.147 81.146 81.145 81.141

GLOBAL POSITIONING SYSTEM
83.204 83.087 83.086 83.079 82.145 82.131
82.124

GRAPHICS
82.094 82.088 82.081 82.080 81.107 80.068
80.055 79.230 79.118 79.097 79.065 79.062
79.042 79.024 78.141 78.087 78.073 78.062
78.037 77.246 77.179 76.083 76.031 76.016
75.269 75.219 75.208 75.158 74.108 74.107
73.117 73.082 73.070 73.058 73.055 72.046
72.010

GRAPHICS TERMINALS
83.134 83.133 79.025

GRID STRUCTURES
83.227 83.178 83.022 82.147 82.108 82.033
82.004 81.091 81.087 81.059 81.029 80.065
80.027 79.211 79.135 79.061 78.094 78.078
77.127 77.119 77.108 76.099 76.028 76.009
75.176 75.043 74.055 71.068 71.056

HAZARDS MAPPING
84.001 80.113

HIERARCHICAL STRUCTURES
83.007 82.323

HYDROLOGICAL DATA
83.081 83.075 82.072 81.092

HYDROLOGICAL INFORMATION/SYSTEMS
83.106 83.074 83.036 82.167 82.137 82.132
82.073 81.205 81.047 80.111 80.092 80.039
80.035 80.026 79.026 78.027 77.112 74.144
70.007

IMAGE INTERPRETATION
83.125 83.078 83.054 83.051 82.163 82.116
82.061 82.031 81.200 81.126 81.040 81.035
80.081 79.167 78.061 77.014 71.025

IMAGE MAPS/MAPPING
83.008 81.089 72.095

IMAGE PROCESSING
83.189 83.126 83.120 83.104 83.085 83.050
83.025 83.019 83.010 82.275 82.269 82.263
82.254 82.246 82.218 82.157 82.142 82.135
82.121 82.087 82.067 82.036 82.018 82.007
81.181 81.174 81.121 81.061 81.043 81.039
81.036 81.034 81.033 81.032 81.015 79.199
79.134 78.148 78.104 78.101 77.243 77.209
77.124 77.008 76.182 76.022 76.013 75.216
75.184 75.165 75.024 74.124 74.113 74.112
74.057 74.054 72.101 72.094 71.048

IMAGE REGISTRATION
82.110 81.015 72.094

IMPACT OF AUTOMATION
80.118 80.094 79.230 79.196 79.182 79.172
79.163 79.118 79.101 79.093 79.089 79.078
79.069 79.068 79.058 79.055 79.022 79.007
79.001 78.187 78.179 78.171 78.144 78.136
78.109 78.099 78.096 78.057 78.040 78.031
78.029 77.255 77.253 77.252 77.247 77.231
77.221 77.212 77.190 77.188 77.163 77.124
77.115 77.106 77.105 77.100 77.081 77.044
77.020 77.013 77.001 76.188 76.184 76.183
76.156 76.153 76.151 76.150 76.143 76.135

76.126 76.125 76.117 76.116 76.109 76.104
76.101 76.082 76.077 76.066 76.060 76.058
76.041 76.034 76.019 76.011 75.282 75.279
75.278 75.267 75.226 75.219 75.212 75.199
75.187 75.182 75.174 75.162 75.150 75.143
75.138 75.130 75.129 75.128 75.127 75.121
75.102 75.100 75.099 75.098 75.071 75.065
75.041 75.040 75.036 75.032 75.027 75.022
75.017 75.013 75.010 74.145 74.141 74.137
74.114 74.112 74.108 74.107 74.084 74.081
74.070 74.069 74.066 74.056 74.053 74.041
74.039 74.038 74.020 74.011 74.010 73.113
73.089 73.022 72.028 70.014

IMPACT OF TECHNOLOGY
79.215

INFORMATION MANAGEMENT SYSTEMS
82.300 82.110 82.102 82.010 81.201 81.170
81.163 81.105 81.063 81.049 81.022 79.196
79.097 78.188 77.247 77.244 77.039 75.254
75.250 75.249 75.248 75.104 74.094 74.026
70.056 70.037 70.030 70.026

INTERACTIVE SYSTEMS
83.194 83.184 83.165 83.146 83.145 83.137
83.136 83.103 83.091 82.297 82.197 82.140
82.108 82.085 82.082 82.042 81.058 80.110
80.022 79.203 79.164 79.137 79.133 79.127
79.098 79.097 79.062 79.053 79.045 79.037
79.034 79.016 79.015 79.003 78.176 78.174
78.162 78.089 78.061 78.058 78.037 78.003
77.249 77.241 77.183 77.171 77.164 77.092
77.054 77.047 77.025 77.011 76.183 76.178
76.176 76.119 76.111 76.083 76.048 76.031
76.013 75.260 75.230 75.193 75.171 75.161
75.120 75.095 75.086 75.035 75.028 75.027
75.003 74.077 74.025 74.021 73.070 73.052
72.072

LAND CAPABILITY INFORMATION/SYSTEMS
83.067 83.021

LAND INVENTORY
82.318 71.062

LAND REGISTRATION SYSTEMS
80.076 79.178 79.161 79.137 78.149 78.102
78.042 77.190 77.168 77.066 76.181 76.084
76.055 76.012 75.227 75.204 75.129 75.101
75.026 75.020 74.092 74.091 74.090 74.089
74.088 74.069 74.063 73.090 73.005 72.073
72.026

LAND RESOURCE MANAGERS
83.155

LAND TITLE RECORD SYSTEMS
80.083 80.079 80.054 80.052 80.023 80.021
80.016 80.008 79.139 79.129 79.083 79.070
79.058 79.057 79.031 79.010 78.180 78.153
78.102 78.007 77.242 77.195 77.176 77.146
77.138 77.118 76.179 76.177 76.170 76.141
76.113 76.110 76.097 76.082 76.081 76.072
76.053 76.051 76.050 76.040 76.039 76.030
75.272 75.262 75.261 75.203 75.201 75.143
75.079 75.078 75.069 75.046 75.033 75.023
75.012 74.145 74.141 74.061 74.052 74.032
73.142 73.134 73.103 73.089 73.077 73.046
73.018 73.013 73.009 72.026

LAND USE CAPABILITY
83.207 83.159 83.088 83.055 82.320 82.292
82.258 82.220 82.202 82.186 82.180 81.187
81.184 81.172 81.152 81.151 81.111 79.181
79.157 76.057 75.142 75.043 73.118 73.078
73.054

LAND USE CLASSIFICATION
83.231 83.226 83.215 83.212 83.151 83.012
82.300 82.231 82.173 82.150 82.098 82.047
81.196 81.195 81.163 81.142 81.125 81.119
81.110 81.080 81.063 81.048 79.175 79.047
78.084 77.088 76.100 76.004 74.124 74.120
74.119 73.092 72.071 71.008 70.019

LAND USE DATA
83.097 83.096 82.224 82.208 82.011 81.006
80.091 80.004 79.215 79.192 79.144 79.119
79.044 79.006 78.176 74.069 70.042

LAND USE INFORMATION/SYSTEMS
83.179 83.175 83.170 83.162 83.159 83.150
83.148 83.144 83.118 83.067 82.318 82.315
82.312 82.300 82.291 82.265 82.264 82.219
82.207 82.198 82.170 82.105 82.098 82.078
82.076 82.010 81.202 81.175 81.113 81.063
81.031 80.096 80.075 80.073 80.070 80.068
80.047 80.038 80.036 80.030 80.016 80.010
80.004 79.212 79.202 79.178 79.177 79.175
79.147 79.144 79.119 79.078 79.044 79.043
79.010 79.006 78.190 78.180 78.179 78.139
78.133 78.118 77.255 77.250 77.248 77.211
77.208 77.189 77.184 77.155 77.130 77.128
77.122 77.095 77.085 77.081 77.071 77.067
77.065 77.064 77.063 77.062 77.059 77.057
77.035 77.007 77.004 77.002 76.181 76.162
76.152 76.133 76.131 76.130 76.115 76.111
76.108 76.105 76.095 76.089 76.082 76.081
76.079 76.075 76.063 76.055 76.039 76.020
76.004 76.003 75.286 75.285 75.280 75.276
75.275 75.262 75.261 75.258 75.251 75.245
75.239 75.238 75.237 75.222 75.220 75.217
75.206 75.205 75.203 75.192 75.179 75.155
75.117 75.092 75.089 75.074 75.056 75.053
75.051 75.037 75.030 75.026 75.023 75.021
75.020 75.012 74.138 74.136 74.128 74.121
74.119 74.115 74.111 74.092 74.091 74.090
74.089 74.085 74.073 74.072 74.070 74.059
74.051 74.008 74.005 73.133 73.132 73.11[illegible]
73.105 73.101 73.091 73.087 73.072 73.065
73.050 73.026 73.019 73.005 72.102 72.090
72.089 72.075 72.063 72.050 72.033 72.011
72.004 72.003 71.070 71.067 71.062 71.059
71.058 71.051 71.037 70.057 70.043 70.042
70.041 70.040 70.035 70.034 70.020 70.012
70.004

LAND USE MAPPING
73.029

SUBJECT INDEX

LAND USE PLANNING/MANAGEMENT
83.230 83.229 83.228 83.172 83.164 83.157
83.152 83.149 83.147 83.117 83.053 82.310
82.227 82.178 82.084 82.014 81.176 81.150
81.131 81.112 81.074 80.023 79.183 79.157
79.043 79.007 78.037 77.176 77.109 77.038
76.164 76.061 76.057 76.032 75.256 75.243
75.236 75.235 74.127 74.122 74.110 74.103
74.101 74.087 74.086 73.127 73.120 73.111
73.049 72.085 72.084 72.074 72.058 72.040
70.019

LANDSAT DATA (SEE ALSO REMOTE SENSING DATA)
83.156 83.122 83.121 83.088 83.041 82.231
82.230 82.229 82.222 82.220 82.159 82.158
82.119 82.059 82.037 82.009 82.005 81.170
81.124 81.121 81.105 81.102 81.072 80.087
80.072 80.070 80.041 79.149 79.126 78.148
78.122 78.121 78.088 77.206 77.196 77.008
76.044 76.002

LEGAL/LEGISLATIVE ASPECTS
79.202 75.276 73.087

LINE REPRESENTATION
83.123 83.013 82.162 82.144 82.043 82.021
82.006 81.028 79.124 79.002 77.227 77.061
77.027 76.016 75.241 75.185 75.062 73.051
71.032

LINEAR FEATURES
82.021

MAP DESIGN
82.093 82.020 82.001 81.122 81.037 81.022
75.183

MAP PROJECTIONS
83.018 81.055 76.065 75.033

MAP SYMBOLOGY
82.128 82.107 82.055 82.034 82.022 81.138
79.208 79.110 79.109 79.076 79.067 79.050
78.064 78.048 76.091 75.158 75.062 75.052
74.081 73.141

MAP USE
82.213

MAPPING PROGRAMMES
83.212 83.167 83.165 83.127 83.065 83.057
83.045 83.038 82.289 82.279 82.235 82.206
82.089 82.060 82.041 81.159 81.158 81.115
81.054 81.044 81.007 81.001 80.113 80.086
80.063 80.060 80.057 80.050 80.030 80.015
79.225 79.219 79.205 79.203 79.180 79.167
79.165 79.159 79.149 79.084 79.065 79.048
79.040 79.027 79.018 78.187 78.186 78.183
78.182 78.170 78.166 78.161 78.159 78.158
78.157 78.154 78.141 78.135 78.125 78.112
78.108 78.084 78.074 78.057 78.054 78.050
78.029 78.022 78.019 78.009 78.004 78.003
77.238 77.236 77.229 77.213 77.212 77.163
77.157 77.150 77.149 77.119 77.108 77.102
77.095 77.091 77.076 77.073 77.072 77.071
77.070 77.061 77.028 77.024 77.023 77.019
77.016 77.009 76.187 76.185 76.184 76.165
76.160 76.145 76.109 76.107 76.103 76.074
76.068 76.067 76.029 76.027 76.017 76.016
75.274 75.236 75.225 75.222 75.200 75.172
75.155 75.150 75.133 75.121 75.115 75.108
75.094 75.090 75.088 75.087 75.081 75.055
75.052 75.038 75.031 75.014 75.007 75.006
74.139 74.114 74.100 74.093 74.068 74.066
74.058 74.054 74.016 74.004 74.002 73.137
73.133 73.110 73.092 73.084 73.059 73.058
73.052 73.020 73.010 72.101 72.089 72.087
72.021 71.081 71.049 71.035 71.019 71.018
70.049 70.041

MAPPING SOFTWARE
83.025 83.024 81.104 81.042 81.022 80.109
80.106 79.229 79.221 79.214 79.213 79.208
79.188 79.187 79.159 79.151 79.150 79.146
79.145 79.143 79.107 79.102 79.095 79.080
79.076 79.067 79.060 79.059 79.052 79.028
79.026 79.018 79.012 78.177 78.124 78.048
78.047 78.018 77.236 77.140 77.097 77.029
76.168 76.101 76.088 76.067 76.065 76.019
76.018 75.279 75.264 75.247 75.243 75.231
75.200 75.186 75.172 75.140 75.094 75.052
75.047 75.010 74.060 74.033 73.143 73.137
73.117 73.048 73.022 72.103 72.081 72.070

MAPPING SYSTEMS
83.203 83.102 82.071 81.177 81.054 81.018

MARITIME LAND
81.202 80.091 80.076 80.016 79.178 79.177
79.161 79.147 79.041 78.166 78.149 77.189
77.163 77.130 77.096 77.063 77.049 77.002
76.162 76.095 76.055 75.089 74.024 73.091
73.031 72.075 71.079 71.046 71.030

MILWAUKEE
82.101

MINERAL RESOURCE INFORMATION/SYSTEMS
81.114 78.143 78.115 78.090 77.237 77.233
77.225 77.101 77.080 77.031 76.102 76.085
76.033 75.281 75.163 75.082 75.045 73.028

MODELLING
83.069 82.252 82.098 81.106

MONITORING
82.159

MUNICIPAL INFORMATION/SYSTEMS
83.169 82.286 77.048 75.227 74.098 74.056
73.080 72.002 71.016 71.015 71.014

NATIONAL STANDARDS
83.197 83.141 83.060 83.033 82.309 82.308
82.307 82.182 82.165 82.003 81.128

NATURAL RESOURCE INFORMATION/SYSTEMS
83.214 83.160 83.122 83.077 82.313 82.229
82.205 82.161 81.082 81.077 80.101 80.088
80.061 80.050 79.209 79.195 79.181 79.122
79.093 79.086 79.079 79.054 79.042 79.041
78.164 78.163 78.160 78.145 78.143 78.134
78.109 78.107 78.076 78.068 78.011 78.004
77.232 77.218 77.206 77.204 77.187 77.179
77.162 77.161 77.120 77.056 77.053 77.035

76.186 76.140 76.129 76.123 76.112 76.096
76.094 76.054 76.047 76.046 75.257 75.255
75.232 75.212 75.207 75.206 75.202 75.190
75.189 75.178 75.171 75.149 75.142 75.140
75.123 75.119 75.110 75.096 75.072 75.042
75.034 75.009 75.008 74.143 74.117 74.100
74.093 74.079 74.064 74.045 74.036 74.035
74.034 74.002 73.113 73.110 73.053 73.030
73.029 72.062 72.035 72.014 72.013 72.005
71.047 70.033 70.017

NATURAL RESOURCE MAPPING
83.173 82.223 82.148

NATURAL RESOURCE PLANNING/MANAGEMENT
83.179 83.091 82.316 82.304 82.280 82.211
82.179 82.177 82.167 82.166 81.162 81.154
81.153 81.126 81.124 81.066 78.145 77.232
77.132

NAUTICAL CHARTING
83.038

OAK RIDGE
81.104

PARCEL IDENTIFICATION
80.052 79.083 79.057 77.176 77.158 77.113
77.059 76.070 76.015 75.221 75.166 75.020
75.006 74.130 74.121 74.109 74.094 74.085
74.049 74.029 74.028 73.136 73.134 73.125
73.108 73.105 73.098 73.097 73.096 73.094
73.071 73.050 73.047 73.031 73.022 73.019
73.018 73.017 73.014 73.013 73.012 73.010
73.009 73.007 73.002 73.001 72.097

PHOTOGRAMMETRY
83.217 83.010 82.237 82.065 82.057 81.039
80.117 79.224 79.111 79.091 78.059 78.058
78.057 76.103 75.165 75.084 74.126 74.027

PLANNING/APPLICATIONS
83.193 83.112 81.156 81.066 80.094 79.220
79.209 79.194 79.184 79.183 79.160 79.149
79.148 79.143 79.136 79.113 79.096 79.094
79.079 79.073 79.040 79.014 79.013 78.162
78.140 78.134 78.124 78.109 78.104 78.097
78.095 78.052 78.042 78.028 77.229 77.220
77.219 77.201 77.200 77.191 77.185 77.180
77.161 77.158 77.154 77.146 77.123 77.103
77.102 77.083 77.081 77.077 77.067 77.058
77.056 77.037 77.036 76.178 76.159 76.146
76.131 76.124 76.094 76.092 76.074 76.059
76.044 76.014 75.214 75.197 75.191 75.188
75.178 75.142 75.011 75.008 74.102 74.079
74.071 74.014 74.005 73.100 73.080 73.078
73.072 73.063 73.053 72.117 72.098 72.051
72.040 72.038 72.033 72.032 72.028 72.009
72.003 71.065 70.042 70.021 70.017 70.015
70.010

PLOTTERS
83.084 83.083 83.082 83.068 83.009 82.228
82.092 81.013 80.114 79.110 79.023

POLYGON STRUCTURES
80.058 79.200 79.150 79.141 79.084 79.080
79.039 79.032 78.178 78.172 77.249 77.239
77.094 76.145 75.155 75.039 75.009 75.001
74.135 73.114 73.030

QUAD-TREES
83.210 83.099 82.285 82.278 82.255 82.250
82.248 82.246 82.245 82.239 82.019 81.169
81.168 81.167

RASTER DATA STRUCTURES
83.023 82.271 82.232 82.216 82.180 81.133

RASTER FORMAT PROCESSING
82.284 82.083 79.170 79.134 79.024 79.020
77.186 77.033 75.100

RASTER SCANNING
83.223 83.195 83.191 82.298 82.283 82.249
82.175 82.089 82.083 81.139 81.059 81.014
81.012 81.011 80.051 77.001 75.136

REGIONAL INFORMATION/SYSTEMS
83.145 83.144 83.108 82.299 82.202 81.130
81.117 80.108 80.037 79.169 79.143 79.142
79.054 79.004 78.023 77.250 77.220 77.217
77.207 77.206 77.202 77.185 77.184 77.161
77.155 77.151 77.131 77.116 77.109 77.102
77.101 77.096 77.089 77.072 77.069 77.067
77.031 76.167 76.136 76.114 76.113 76.100
76.089 76.075 76.059 76.056 76.038 75.235
75.228 75.224 75.217 75.215 75.196 75.189
75.188 75.172 75.153 75.150 75.142 75.111
75.091 75.080 75.079 75.076 75.074 75.059
74.110 74.083 74.074 74.073 74.050 74.047
74.046 74.037 74.031 74.018 73.122 73.118
73.088 73.075 73.064 73.063 73.060 73.055
73.054 73.027 72.110 72.098 72.082 72.043
72.039 72.023 72.011 71.074 71.054 71.050
71.046 71.038 71.022 71.012 71.011 71.005
70.046 70.038 70.028 70.021 70.010

RELIEF REPRESENTATION
81.040

REMOTE SENSING ANALYSIS
83.098 83.049 82.281 82.280 82.274 82.242
82.237 82.218 82.215 82.157 82.156 82.146
82.059 82.053 82.050 82.049 82.048 82.037
82.027 81.127 81.085 81.074 81.036 81.032
80.050 75.097 74.078 74.027 73.075 73.066
72.101 72.096 72.095 72.051 71.025 71.003

REMOTE SENSING DATA/SYSTEMS
83.231 83.206 83.139 83.056 83.041 83.040
83.011 82.176 82.152 82.147 82.136 82.066
82.039 82.009 82.008 82.005 81.186 81.185
81.123 81.010 80.093 80.078 80.048 80.046
80.011 79.148 79.142 79.126 79.028 78.129
78.106 78.040 77.248 77.134 77.056 77.050
77.033 77.008 76.140 76.103 76.093 76.044
76.002 75.178 75.165 75.097 75.096 75.070
74.072 74.054 74.004 73.138 73.120 72.095
72.093 72.091 72.085 72.062 72.040 70.031

SUBJECT INDEX

ROUTE SELECTION
83.115 82.086 82.015 81.086 81.076

SCANNERS
83.094 82.173 82.141 82.120 81.041 81.021
76.022

SLOPE MAPS/MAPPING
81.016

SOCIO-ECONOMIC INFORMATION/SYSTEMS
83.142 83.138 83.024 82.193 82.133 82.129
81.144 81.075 81.070 81.027 80.116 80.089
80.013 80.009 79.200 79.103 79.094 79.092
79.081 79.030 78.114 78.065 78.033 77.198
77.012 77.011 76.178 75.141 75.116 75.068
75.014 74.099 73.069 72.044

SOIL INFORMATION/SYSTEMS
83.219 83.160 83.064 83.031 82.306 82.106
82.105 82.096 82.075 82.074 81.207 81.206
81.052 80.087 80.069 77.152 77.145 77.074
77.065 77.010 76.187 76.131 75.288 75.282
75.206 75.127 75.077 75.038 74.013

SPATIAL DATA BASE SYSTEMS
83.227 83.210 83.209 83.202 83.190 83.186
83.085 83.062 82.241 82.111 81.199 81.198
81.197 81.051 81.004 76.163 76.088 75.067
72.031 70.022

SPATIAL INFORMATION/SYSTEMS
83.200 82.295 82.290 82.277 82.100 82.090
82.017 82.016 80.085 80.051 80.046 80.008
79.188 79.158 79.099 79.032 78.142 78.138
78.062 78.044 77.251 77.156 77.149 77.137
77.054 77.028 76.175 76.174 76.167 76.092
75.242 75.233 75.218 75.209 75.131 75.130
75.075 74.067 72.087 72.086 72.081 72.064
72.059 72.037 72.017 71.057 71.027 70.022
70.003 70.001

STANDARDS
80.002 79.132 79.109 78.192 78.122 78.115
78.079 77.210 76.181 76.169 76.137 76.017
76.001 75.289 75.085 75.051 74.133 74.132
74.121 74.120 73.121 72.106

STATISTICAL INFORMATION/SYSTEMS
83.177 83.054 81.143 80.078 80.077 80.060
77.241 77.136 75.191 75.167 73.076 72.024

STREET ADDRESSES
72.057

SURVEY SYSTEMS
83.141 83.040 83.034 83.002 82.236 82.209
82.032 82.027 82.025 82.002 81.062 81.056
80.054 80.045 79.204 79.191 79.165 79.154
79.147 79.014 77.168 77.150 76.171 75.252
75.193 74.126 74.016 74.002 73.020 72.025
71.070 71.045 71.037 71.036

SWEDEN
80.004 77.234 77.202 77.184 77.141 76.124
73.132

SYNTHESIS GUIDE COMMUNICATION
81.094

SYSTEM DEVELOPMENT
83.002 82.301 82.263 82.090 81.164 81.162
80.118 80.091 80.045 80.020 79.197 79.183
79.176 79.104 79.090 79.069 79.048 79.031
78.183 78.155 78.108 78.095 78.076 78.028
78.027 78.015 78.014 78.006 77.243 77.220
77.131 77.128 77.126 77.120 77.111 77.103
77.102 77.098 77.091 77.090 77.045 77.026
77.019 77.011 77.005 76.188 76.174 76.173
76.168 76.157 76.149 76.145 76.140 76.134
76.133 76.129 76.124 76.121 76.108 76.105
76.104 76.095 76.092 76.060 76.054 76.046
76.029 75.258 75.239 75.232 75.210 75.188
75.154 75.147 75.134 75.133 75.132 75.126
75.120 75.118 75.112 75.099 75.091 75.072
75.069 75.046 75.034 75.032 75.028 75.027
75.018 75.016 75.015 75.009 74.128 74.117
74.110 74.106 74.064 74.052 74.051 74.045
73.110 73.085 73.083 73.068 73.060 73.059
73.027 73.026 73.022 73.005 72.117 72.110
72.098 72.079 72.066 72.065 72.064 72.046
72.027 72.024 72.019 72.014 72.008 72.001
71.078 71.065 71.056 71.033 71.014 71.009
70.059 70.058 70.034 70.033 70.001

SYSTEMS/SOFTWARE INVENTORIES
81.005

TERRAIN DATA
83.205 83.093 83.016 82.210 82.206 82.064
82.051 82.046 82.045 82.030 82.029 81.183
81.158 81.136 81.099 81.083 81.023 81.009
80.026 79.185 79.117 79.087 79.071 79.064
79.061 79.046 78.186 78.150 78.126 78.121
78.110 78.085 78.080 78.056 78.047 78.045
78.039 78.006 77.246 77.127 76.078 75.279
75.243 75.184 75.168 75.148 75.061 75.024
74.083 74.021

TERRAIN ELEVATION DATA
83.016 82.182 82.134 82.046 82.030 81.023

TERRAIN MODELLING
83.105 83.090 83.027 83.021 82.288 82.282
82.281 82.270 82.217 82.212 82.147 82.064
82.028 81.134 80.114 80.111 80.105 80.104
80.048 80.027 80.025 80.005 79.185 79.135
79.087 79.079 79.075 79.071 79.064 78.186
78.150 78.110 78.098 78.080 78.068 78.039
78.004 77.127 76.128 76.127 76.116 75.277
75.243 75.060 72.077 70.045 70.008

THEMATIC MAPS/MAPPING
83.221 83.155 83.119 83.043 83.028 83.015
83.005 80.104 80.099 80.070 80.067 80.049
80.048 79.229 79.155 79.150 79.146 79.145
79.105 79.092 79.060 79.011 78.085 78.048
77.025 76.185 76.176 76.002 75.273 75.198
75.115 75.062 74.140 74.139 74.084 73.024

SUBJECT INDEX

THREE-D MAPS
83.208 83.187 83.119 82.293 82.247 82.174
82.077 82.020 78.062 75.225 75.168

TOPOGRAPHIC DATA STRUCTURES
83.198 82.307 82.272 81.180 79.154 78.056
76.049 76.010 75.148 75.106 75.105 75.061
74.060

TOPOGRAPHIC MAPS/MAPPING
83.056 82.321 82.319 82.107 80.003 79.180
79.124 79.116 78.181 78.047 78.003 78.002
77.225 77.212 77.076 77.017 77.003 76.184
76.158 76.019 76.018 76.009 75.252 75.183
75.133 75.052 75.024 75.010 74.137 74.126
73.130 72.109 71.048

TOPOLOGICAL DATA STRUCTURES
83.063 81.050 78.137 77.242 77.241 77.240
76.042 75.264 75.182

TOPOLOGY
83.187 82.234 77.239 77.127 75.063 73.139

TRANSPORTATION INFORMATION/SYSTEMS
83.076 81.149 80.066 79.113 78.092 78.006
77.141 77.121 77.037 77.032 75.269 75.173
75.086 75.065 75.048 73.067 72.108 71.075
71.034 71.024

UNB
81.112

URBAN AND REGIONAL INFORMATION/SYSTEMS
83.144 82.294 82.192 82.102 81.148 81.140
81.130 81.053 79.096 78.130 78.103 78.070
77.145 75.214 75.145 73.125 73.045 72.117
72.112 72.088 72.056 72.053 72.042 72.034
70.023 70.016

URBAN INFORMATION/SYSTEMS
83.156 82.287 82.188 82.187 82.136 81.177
81.144 81.142 81.070 80.097 80.062 80.044
80.029 80.024 80.015 79.220 79.206 79.194
79.191 79.111 79.073 78.185 78.184 78.152
78.131 78.128 78.127 78.097 78.015 77.229
77.199 77.180 77.175 77.167 77.159 77.148
77.142 77.126 77.123 77.118 77.115 77.111
77.103 77.096 77.085 77.079 77.073 77.068
77.048 77.030 76.147 76.144 76.137 76.135
76.024 76.021 76.014 76.012 75.263 75.223
75.213 75.195 75.117 75.113 75.108 75.088
75.071 75.070 75.068 75.058 75.057 75.055
75.054 75.031 75.016 75.001 74.104 74.075
74.071 74.065 74.048 74.029 74.028 74.023
74.012 73.144 73.143 73.138 73.128 73.124
73.116 73.109 73.100 73.094 73.074 73.044
73.043 73.042 73.041 73.040 73.039 73.038
73.037 73.036 73.035 73.034 73.033 73.032
73.015 73.014 73.012 73.010 73.002 72.118
72.096 72.085 72.072 72.055 72.054 72.053
72.048 72.038 72.036 72.032 72.031 72.028
72.027 72.025 72.008 72.007 71.063 71.055
71.045 71.025 71.016 71.004 70.061 70.055
70.053 70.039 70.036 70.029 70.015 70.014
70.009

URBAN PLANNING/MANAGEMENT
83.126 82.190 82.189 81.201 79.228 78.146
75.220 75.178 75.132 75.056 75.053 72.063
72.009 71.063

USER NEEDS
79.172 79.063 78.158 78.154 78.131 78.054
77.215 77.201 77.191 77.165 77.049 77.041
76.156 76.045 76.025 76.012 76.004 76.003
75.270 75.263 75.156 75.112 75.109 75.047
75.018 75.016 75.015 74.001 73.120 73.030
73.012 72.110 72.092 72.067 72.044

UTILITIES INFORMATION/SYSTEMS
83.180 83.080 83.057 82.204 80.110 80.058
80.007 79.193 79.051 78.127 77.036 75.162

VECTOR FORMAT PROCESSING
83.223 82.091

VIDEO DISC
83.065

WATER RESOURCES INFORMATION/SYSTEMS (SEE ALSO HYDROLOGICAL INFORMATION/SYSTEMS)
82.122 82.073 81.047 80.024 80.020 79.197
78.168 78.128 78.032 78.010 77.230 77.131
76.118 75.265 75.253 75.112 74.101 74.059
70.026

WILDLIFE INFORMATION/SYSTEMS
79.168 79.166 79.120 79.005 77.205 77.159
76.160 74.078

SYSTEM/SOFTWARE INDEX

SOFTWARE INDEX

ACCESS (ALTERNATIVE COMPREHENSIVE COMMUNITY ENVIRONMENTAL STUDY SYSTEM)
77.093 77.092

ACES (AUTOMATIC CARTOGRAPHIC FEATURE EXTRACTION SYSTEM)
78.147

ADAPT (AREAL DESIGN AND PLANNING TOOL)
80.073 78.071

ADLIB (A MULTI-FUNCTION SITE ADDRESS LIBRARY)
82.200

ADMATCH
76.052 75.188 74.033 72.057 71.072 71.027 70.020

ADMINS, MASSACHUSETTS
73.081 73.080 73.079

AES (ADVANCED EDIT SYSTEM)
83.009

AGIS (AUTOMATED GEOGRAPHIC INFORMATION SYSTEM) SOUTH DAKOTA
79.130

AIDS (AUTOMATED INFORMATION DIRECTORY SYSTEMS)
83.076 81.076

AIS (AUTOMATED INFORMATION SYSTEM)
83.174

ALICE
78.103

AMS (ADVANCED MAPPING SYSTEM) U.S. SOIL CONSERVATION SERVICE
75.127

AOIPS (ATMOSPHERIC AND OCEANIC INFORMATION PROCESSING SYSTEM) U.S. NATIONAL SPACE ADMINISTRATION
79.026 78.018

AREAS (AREA RESOURCE ANALYSIS SYSTEM)
82.105

ARIS (ALABAMA RESOURCE INFORMATION SYSTEM)
74.045

ARITHMICON, U.S. CENSUS BUREAU
77.242 77.241 77.240

ARSIS (A RELATIONAL SOIL INFORMATION SYSTEM)
83.064

ARTINS (ARMY TERRAIN INFORMATION SYSTEM) U.S. ARMY ENGINEER LABS
78.126

ASPEX, HARVARD LABORATORY
79.059

ATLASS (ADMINISTRATION AND TOTAL LAND USE ANALYSIS SUPPORT SYSTEM)
80.103

AUTOMAP (AUTOMATIC MAPPING SYSTEM) SYSTEMHOUSE LTD.
78.043 70.052

BASIS (BAY AREA SPATIAL INFORMATION SYSTEM) SAN FRANCISCO
82.185 80.113 79.220 78.190

BRUTE
82.024

CAASE (COMPUTER ASSISTED AREAL SOURCE EMISSIONS) RESEARCH INSTITUTE, NC
78.078

CALFORM (CALCOMP CONFORMANT MAPPING PROGRAM)
80.116 79.213 75.209 70.052

CALIFORNIA INTEGRATED REMOTE SENSING SYSTEM
82.119

CAM (CARTOGRAPHIC AUTOMATED MAPPING) CENTRAL INTELLIGENCE AGENCY
77.044

CAMRAS (COMPUTER ASSISTED MAPPING AND RECORDS ACTIVITIES SYSTEMS)
80.110 80.007 79.009 79.008 78.188 78.073 77.016

CAMS (CENTER FOR THE ANALYSIS OF MARINE SYSTEMS)
83.036

CAMS (COMPUTER AUGMENTED MAPPING SYSTEM) UCLA
79.125 75.115

CANSIS (CANADA SOIL INFORMATION SYSTEM)
83.181 80.069 77.145 77.144 75.077 75.038

CAPDET (COMPUTER ASSISTED PROCEDURE FOR THE DESIGN AND EVALUATION OF WASTE WATER TREATMENT)
83.215

CARETS (CENTRAL ATLANTIC REGIONAL ECOLOGICAL TEST SITE) U.S. GEOLOGICAL SURVEY
77.170 76.106 76.008 76.007 76.006 76.005 75.005 75.004 73.004

SOFTWARE INDEX

CARIS (COMPUTER AIDED RESOURCE INFORMATION SYSTEM)
    83.173

CARTE, BERKELEY, CA
    74.139

CATCH (COMPUTER-ASSISTED TOPOGRAPHY, CARTOGRAPHY AND HYPSOGRAPHY)
    76.158

CCM (COMPOSITE COMPUTER MAPPING) UTAH UNIVERSITY BUREAU OF ECONOMIC AND BUSINESS RESEARCH
    71.035

CEREAS (CATEGORICAL EXCLUSION REVIEW/ENVIRONMENTAL ASSESSMENT SYSTEM)
    83.070 83.014

CFRDS (CANADIAN FOREST RESOURCE DATA SYSTEM) CANADA DEPARTMENT OF ENVIRONMENT
    78.016

CGIS (CANADA GEOGRAPHIC INFORMATION SYSTEM)
    82.211 80.068 80.042 79.042 78.151 78.108
    77.043 77.040 76.155 76.145 76.075 76.004
    75.232 75.097 75.096 73.083 72.023

CHS (CANADIAN HYDROGRAPHIC SYSTEM)
    73.059 72.019 70.052

CIMS
    81.018

CLDS (CANADA LAND DATA SYSTEM)
    82.211 81.152

CLUIS (COMPUTERIZED LAND USE INFORMATION SYSTEM) CANADA FORESTRY SERVICE
    73.127

COMLUP (COMPUTER MAPPING FOR LAND USE PLANNING) U.S. FOREST SERVICE
    75.194 73.006

CPIS (CITYWIDE PARCEL INFORMATION SYSTEM) LOS ANGELES, CA
    74.028

CRAIGES (CARTOGRAPHIC REPRODUCTION AND INTERACTIVE GRAPHICS EDITING SYSTEM)
    82.256

CREAL (COMPUTERIZED REAL ESTATE ASSESSMENT AND LAND RECORDS) KENTUCKY
    77.195 77.138

CRIB, U.S. GEOLOGICAL SURVEY
    73.028

CRIS (COMARC DESIGN SYSTEMS) SAN FRANCISCO
    80.031 79.112 78.041

CROPP (CONFORMAL REPRESENTATION OF THE PRAIRIE PROVINCES)
    73.057 72.021

CUPID
    81.148

DCAP (DIGITAL CARTOGRAPHIC APPLICATION PROGRAM) U.S. GEOLOGICAL SURVEY
    79.140

DEMONS (DEMONSTRATION IMAGE PROCESSING SYSTEM)
    80.093

DIDS (DECISION INFORMATION DISPLAY SYSTEM)
    83.165

DIDS (DOMESTIC INFORMATION DISPLAY SYSTEM) U.S. GOVERNMENT
    80.043 80.029 79.053

DIME (DUAL INDEPENDENT MAP ENCODING) U.S. BUREAU OF THE CENSUS
    79.150 79.101 78.077 77.236 77.226 77.167
    77.142 76.159 76.132 76.090 76.067 75.264
    75.134 75.132 75.085 75.071 75.065 75.040
    75.019 75.018 75.001 74.107 74.105 74.080
    74.057 74.042 73.143 73.128 73.081 73.080
    73.079 73.047 73.011 72.068 72.019 72.018
    71.073 71.038 71.027 71.023 70.054

DIPMCS (DIGITAL INTERACTIVE PHOTOGRAMMETRIC MAP COMPILATION SYSTEM) ENERGY, MINES, RESOURCES CANADA
    78.003

DLMS (DIGITAL LANDMASS SYSTEM)
    82.182

DMP (DIGITAL MONO-PLOTTING SYSTEM)
    82.228

DOTMAP, HARVARD LABORATORIES
    79.067

DTIB (DIGITAL TOPOGRAPHIC INFORMATION BANK) U.S. DEFENSE MAPPING AGENCY
    75.061

DTIS (DIGITAL TERRAIN INFORMATION SYSTEM) U.S. FOREST SERVICE
    78.068

SOFTWARE INDEX

E & R SYSTEMS
81.041

EDAP (ENVIRONMENTAL DESIGN ALIGNMENT PROCESS) WISCONSIN
73.101

EEWS (ENVIRONMENTAL EARLY WARNING SYSTEM)
83.091

EMDAS (ENVIRONMENTAL MANAGEMENT DECISION ASSISTANCE SYSTEM) TEXAS
77.200

ENVIRONMENTAL STUDIES DATABASE AND ANALYSIS SYSTEM
82.132

EPAMS (ENVIRONMENTAL PLANNING AND MANAGEMENT SYSTEM) ORANGE COUNTY
77.133

ERDS (ENERGY RESOURCES DATA SYSTEM) ALBERTA
80.040 79.152 77.174

ETIS (ENVIRONMENTAL TECHNICAL INFORMATION SYSTEM)
83.158

EWIS (ELECTRONIC WARFARE INFORMATION SYSTEM)
82.133

FALCON (FOREST ADVANCED LOGGING AND CONSERVATION)
74.027

FCLRIS (FORSYTH COUNTY LAND RECORD INFORMATION SYSTEM)
79.006 76.152 76.117 76.107 76.082 76.081
76.072 76.064 76.061 76.053 76.020 75.166
75.079 75.015 74.052 74.008 71.082 71.005

FEED (FIELD EXPLORATION OF ELEVATION DATA)
83.042

FFDTDVLDS (FIREFINDER)
81.088

FINSYS, U.S. FOREST SERVICE
79.120 78.004

FRIS (FOREST RESOURCE INFORMATION SYSTEM) PURDUE UNIVERSITY
83.089 81.064 78.119

GARNET (GRAPHIC ANALYSIS OF RESOURCES BY NUMERICAL EVALUATION TECHNIQUE)
77.179

GCARS (GENERALIZED COMPUTER AIDED ROUTE SELECTION)
78.162

GDDS (GEOGRAPHIC DATA DISPLAY SYSTEM) MITRE CORPORATION
77.147

GDPS
81.020

GELO (GEOGRAPHIC LOCATOR) U.S. FOREST SERVICE
75.140

GEOBANK, U.S. STEEL CORP.
78.035

GEOLOG (UNIVERSITY OF BRITISH COLUMBIA)
72.012

GEOMAP
75.029

GEORGE (GEOCODE REPORT GENERATOR) CITY OF CALGARY
77.005 75.113 74.098

GIMMS (GEOGRAPHIC INFORMATION MANIPULATION AND MAPPING SYSTEM) UNIVERSITY OF EDINBURGH
79.229 79.208 79.040 78.043 77.237 76.166

GIRAS (GEOGRAPHIC INFORMATION RETRIEVAL AND ANALYSIS SYSTEM) U.S. GEOLOGICAL SURVEY
79.085 79.047 77.169

GIS (GEOGRAPHIC INFORMATION SYSTEMS)
83.052 82.127

GLSS (GRAPHIC LINE SYMBOLIZATION SYSTEM)
76.016

GMAPS (GENERAL MAP ANALYSIS AND PLANNING SYSTEM)
78.170 78.162

GNIS (GEOGRAPHIC NAMES INFORMATION SYSTEM)
82.181

GRASP (GEOGRAPHIC RESOURCE ANALYSIS SOFTWARE PACKAGE)
77.162 77.035

GRASP (GEOLOGICAL RETRIEVAL AND STORAGE PROGRAM) U.S. GEOLOGICAL SURVEY
76.073 75.034

SOFTWARE INDEX

GRASP (GRAPHIC RETRIEVAL AND SPACIAL PORTRAYAL)
82.137

GRDSR (GEOGRAPHICALLY-REFERENCED DATA STORAGE AND RETRIEVAL SYSTEM) STATISTICS CANADA
78.175 76.173 75.191 72.080 72.079 72.056 72.024 71.042

GRID (GENERALIZED RASTER INFORMATION DISPLAY) U.S. FOREST SERVICE
75.251 75.212 75.209

GRIDGEN
82.108

GRIDOT
76.065

GRIDS (GRIDDED RESOURCE INVENTORY DATA SYSTEM) STATE OF WASHINGTON
73.066 72.103

GRIP (GEOGRAPHIC RETRIEVAL AND INFORMATION PROCESSING)
78.046

GRS (GEOGRAPHIC REFERENCING SYSTEM) CITY OF CALGARY
80.028 78.001

HYSUR (HYDROGRAPHIC SURVEY REQUIREMENTS SYSTEM)
83.106 83.081

IBIS (IMAGE BASED INFORMATION SYSTEM)
79.134 79.028 78.106

ICFITG
81.090

ICMS (INTERACTIVE CHOROPLETH MAPPING SYSTEM) OHIO STATE UNIVERSITY
79.203

IFAS (INTERACTIVE FRACTAL ANALYSIS SYSTEM)
82.117

ILLIMAP (ILLINOIS MAPPING SYSTEMS)
70.046

IMAGE, UNIVERSITY OF SASKATCHEWAN
74.019

IMGRID, HARVARD LABORATORY
79.190

IMIS (INTEGRATED MUNICIPAL INFORMATION SYSTEM)
74.056 73.109 73.043 73.042

INTAHILS (AN INTERACTIVE ANALYTICAL HILL SHADING SYSTEM)
82.022

INTERSECT, U.S. CENSUS BUREAU
75.247

IOSL GRAPHICS
82.094

IPDS (INTEGRATED PHYSICAL DATA SYSTEM) CITY OF DETROIT
80.090

IPIN (INTEGRATED PHOTOGRAMMETRIC INSTRUMENT NETWORK) U.S. DEFENCE MAPPING AGENCY
78.057 78.045

IRIS (ILLINOIS RESOURCE INFORMATION SYSTEM)
73.008 72.110

IRIS (INTER-REGIONAL INFORMATION SYSTEM) STATE OF OREGON
74.074

ISADS (INTERACTIVE SPATIAL ANALYSIS AND DISPLAY SYSTEM) WASHINGTON UNIVERSITY
77.054

KRIS (KANSAS CITY REGIONAL INFORMATION SYSTEMS)
70.028

KRS (K-DIVISION RETRIEVAL SYSTEM) UNIVERSITY OF CALIFORNIA
78.075

LACIE (LARGE AREA CROP INVENTORY EXPERIMENT) NASA
78.123 75.170 75.169 75.127

LAMAP
82.113

LAMIS (LOCAL AUTHORITY MANAGEMENT INFORMATION SYSTEM)
76.038

LAMP (LOCATION AND MAPPING PROGRAM) NASHVILLE, TN
75.088

LANDS (LANDS DATA SYSTEM)
82.201

LEMS (LOUISIANA ENVIRONMENTAL MANAGEMENT SYSTEM)
75.265

LOIS (LAND ORIENTED INFORMATION SYSTEM) NEW JERSEY
75.117 74.136 73.072

SOFTWARE INDEX

LORDS (LAND ORIENTED WATER RESOURCES DATA SYSTEM) NEW JERSEY
75.117 75.112

LRIS (LAND REGISTRATION INFORMATION SERVICE) MARITIME PROVINCES
80.091 80.076 80.016 79.227 79.180 79.178
79.177 79.161 79.147 79.137 79.129 79.078
78.166 78.149 78.133 77.211 77.190 77.189
77.178 77.130 77.096 77.063 77.062 77.049
77.002 76.162 76.142 76.135 76.134 76.133
76.121 76.105 76.104 76.095 75.217 75.204
75.203 74.024 73.115 73.091 73.031 72.043
71.079 71.046 71.011 70.041

LRIS (LAND RELATED INFORMATION SYSTEMS) COORDINATION PROJECT, ALBERTA
77.004 75.238 75.237 74.121 74.120 74.119

LRIS (LAND RESOURCE INFORMATION SYSTEM) STATE OF IOWA
75.074 74.047

LSAS (LAND STATUS AUTOMATED SYSTEM) ALBERTA, ENERGY AND NATURAL RESOURCES
80.036

LUDA (LAND USE DATA ANALYSIS)
76.001

LUIS (LAND USE INFORMATION SYSTEM) GREATER VANCOUVER REGIONAL DISTRICT
79.143 76.144

LUMIS (LAND USE MANAGEMENT INFORMATION SYSTEM) CALIFORNIA
77.248 76.031 75.194 75.179 74.073 74.005

LUNR (LAND USE AND NATURAL RESOURCES) NEW YORK STATE
77.040 76.155 75.194 74.101 72.089 72.033
70.017

LUPAMS (LAND USE PLANNING AND MANAGEMENT SUBSYSTEM) LOS ANGELES
75.056

MAGI (MARYLAND AUTOMATED GEOGRAPHIC INFORMATION SYSTEM)
82.222 81.075 79.005 79.004 76.059 74.118
74.041

MAPPER
81.071

MAPS (MAP ASSISTED PHOTO INTERPRETATION SYSTEM)
83.085

MAPS (METHODOLOGY FOR AREA-WIDE PLANNING STUDY)
79.206

MAPSAT
81.044

MARS (MAPPING AND RESOURCE ANALYSIS SYSTEM)
82.279 82.213

MCIS (MAP AND CHART INFORMATION SYSTEM) U.S. GEOLOGICAL SURVEY
79.219

MDS (X) (MULTIDIMENSIONAL SCALING) BRITAIN
79.229

METROCOM (METROPOLITAN COMMON DATA BASE) CITY OF HOUSTON
83.169 80.097

MIF (MAP INFORMATION FACILITY)
80.001

MIGS (MICROCOMPUTER INTERACTIVE GEOCARTOGRAPHICS SYSTEM)
83.201

MILUS (MULTIPLE INPUT LAND USE SYSTEM)
75.042

MINIS (MULTIPURPOSE INTERACTIVE NASA INFORMATION SYSTEM)
77.208

MINLAY
82.151

MLIS (MINNESOTA LAND INFORMATION SYSTEM)
78.134 77.120 76.155 76.057 75.119 73.120
73.119 72.074 72.065 71.054

MMS (MICRO MAP SYSTEM) DIME SUPPORT
77.236

MVP (MAP VIDEO PROCESSING SYSTEM)
83.065

NARIS (NATURAL RESOURCE INFORMATION SYSTEM) BOEING COMPUTER SERVICES INC.
75.194 72.062 72.035 72.014 72.013

NATIONAL TECHNICAL INFORMATION SERVICE
83.040 83.010 83.004 83.003 82.070 82.069
82.068 82.057 82.027

NAVSTAR
83.087 83.086 83.079 82.145 82.131 82.124

NCC (NATIONAL CAPITAL COMMISSION INFORMATION SYSTEM)
73.125 73.124

SOFTWARE INDEX

NCRDS (NATIONAL COAL RESOURCES DATA SYSTEM)
76.036 76.035 76.033

NOS (NATIONAL OCEAN SERVICE)
83.174

NYSRPIS (NEW YORK STATE REAL PROPERTY INFORMATION SYSTEM)
75.049

OCAP (OHIO CAPABILITY ANALYSIS PROGRAM)
77.161

ODIS (ON-LINE DIME IMPLEMENTATION SYSTEM)
77.143

ODYSSEY, HARVARD LABORATORY
83.101 79.214 79.159 79.150 79.107 79.080 78.156 78.116 77.084

ORIS (OREGON RESOURCE INFORMATION SYSTEM)
75.171

ORRMIS (OAK RIDGE REGIONAL MODELING INFORMATION SYSTEM)
74.050

OVERLAY
83.190

PACFORNET (PACIFIC COAST FOREST RESEARCH INFORMATION NETWORK) CALIFORNIA
77.042

PEDS (PHYSICAL AND ECONOMIC DEVELOPMENT SUBSYSTEM) LONG BEACH, CA
75.068

PICDMS (PICTURE DATABASE MANAGEMENT SYSTEM)
82.169

PILLAR, UNIVERSITY OF OTTAWA
79.060 78.048 78.043

PIOS (POLYGON INFORMATION OVERLAY SYSTEM)
77.067 77.040 76.155

PLUS (PLANNING LAND USE)
79.207 77.109

PLUTALL, UNIVERSITY OF AKRON
79.187

POLARIS (PROVINCE OF ONTARIO LAND REGISTRATION INFORMATION SYSTEM)
79.172 79.171 78.105 75.192 75.109

POLYPS, HARVARD LABORATORY
79.151

POLYVRT, HARVARD
80.116 74.062

PRISM, HARVARD LABORATORY
79.225 79.076

RAGIS (RICE ARCHITECTURE GEOGRAPHIC INFORMATION SYSTEM) RICE UNIVERSITY
79.012

RAMP (REGIONAL AREA MAPPING PROCEDURE) U.S. FOREST SERVICE
75.172

RAMS (RESEARCH AND MANAGEMENT SHORELINE DATABANK) CHESAPEAKE BAY, MD
75.080

RAP (RESOURCE ANALYSIS PROGRAM) MICHIGAN
77.219

RAPLI-11, U.S. DEPARTMENT OF AGRICULTURE
77.250

REPHLEX (RETRIEVAL PROCEDURES FOR HYDROLOGIC DATA FROM ARS EXPERIMENTAL WATERSHEDS)
83.074

RIPA (RESOURCE INFORMATION FOR PLANNING AND ANALYSIS) WISCONSIN
77.035

RMLR (REGIONAL MAPPING AND LAND RECORDS) PENNSYLVANIA
80.086 79.031 77.185

ROUTE OPTIMIZATION AND DESIGN SYSTEM ROADS
83.115

RUN WILD II, USDA FOREST SERVICE
79.166

SAM (SMALL AREA MAPPING SYSTEM)
83.102

SARS (SUB-AREA RETRIEVAL SYSTEM) GEOLOGICAL SURVEY OF CANADA
75.123

SAS (STATISTICAL ANALYSIS SYSTEM)
81.107

SCHOLAR (COMPUTER AIDED INSTRUCTION)
76.048

SOFTWARE INDEX

SDMS (SPATIAL DATA MANAGEMENT SYSTEM)
80.051 79.099

SEEDIS (SOCIO-ECONOMIC ENVIRONMENTAL DEMOGRAPHIC INFORMATION SYSTEM)
82.111 81.087 80.013 79.029 75.116 75.014

SIFT (SWIC IMPLEMENTATION OF FRONT-END TOOLS)
83.095

SLIMS (STATE AND LOCAL INFORMATION MANAGEMENT SYSTEM)
83.144

SLOPE
76.019

SNAPS (SYMBOL AND NAME PLACEMENT SYSTEM)
70.052

SOUTH DAKOTA AUTOMATED GEOGRAPHIC INFORMATION SYSTEM
78.136

SPEC-DAT (IMAGE PROCESSING SYSTEM)
82.275

STOPIN (SYSTEM FOR TOPOGRAPHIC INQUIRY)
75.106 75.105

STORET (STORAGE AND RETRIEVAL OF WATER RESOURCES INFORMATION) ONTARIO
78.168

SYMAP (SYNAGRAPHIC MAPPING PROGRAM AND SYMAP OUTPUT IN 3-D)
80.116 79.188 79.105 79.019 79.018 75.209
75.093 72.019 72.018 70.052

TELIAS (TELIDON IMAGE ANALYSIS SYSTEM)
83.104

TERRAIN ANALYSIS DATABASE
83.090

TES/EMPS (TERRAIN EDIT SYSTEM/ELEVATION MATRIX PROCESSING SYSTEM)
83.105

TEXAS NATURAL RESOURCES INFORMATION SYSTEM
81.156

TIGER (TOPOLOGICALLY INTEGRATED GEOGRAPHIC ENCODING AND REFERENCING)
83.176 83.107

TIS (TECHNOLOGY INFORMATION SYSTEM)
83.069

TNRIS (TEXAS NATURAL RESOURCES INFORMATION SYSTEM)
79.218 77.217

TOPAS (TOPOGRAPHIC ANALYSIS SYSTEM) U.S. FOREST SERVICE
78.068

TRANES (TRANSPORTATION NETWORK EVALUATION SYSTEM) SAN DIEGO
79.113

UDIS (URBAN DEVELOPMENT INFORMATION SYSTEM) COUNTY OF FAIRFAX, VA
74.071 73.002 72.055 72.054 72.053

URBAN MANAGEMENT AND PLANNING
82.190

URBAX
72.065

URMAP SYSTEM
82.190

USAC (URBAN SYSTEMS INTERAGENCY ADVISORY COMMITTEE PROJECTS)
74.030 73.131 73.044 73.043 73.042 73.040
73.039 73.038 73.036 73.035 73.015 72.045
72.036 72.027 72.026 71.016 71.015 71.014
70.061 70.016

USAMS (U.S. SOFTWARE ANALYSIS & MANAGEMENT SYSTEM)
82.013

UTMDIR
82.012

VICAR/IBIS
82.106

VIEWIT
75.243

WATSTORE (WATER DATA STORAGE AND RETRIEVAL SYSTEM) U.S. GEOLOGIC SURVEY
75.253

WIPS (WOODLANDS INFORMATION AND PLANNING SYSTEM)
79.104 75.072

WRIS (WILDLAND RESOURCE INFORMATION SYSTEM)
81.101 75.212 75.207 75.194 75.009 72.019
72.018